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Thurman D. Kitchin

TRANSACTIONS

OF THE

MEDICAL SOCIETY

OF THE

STATE OF NORTH CAROLINA

DIVISION OF HEALTH SCIENCES LIBRARY

SEVENTY-SIXTH ANNUAL SESSION

HELD AT

GREENSBORO, NORTH CAROLINA

APRIL 15, 16 and 17, 1929

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—*Extract from By-Laws, Chapter 10, Section 8.*

EARLY HISTORY OF THE NORTH CAROLINA MEDICAL SOCIETY, FROM ORGANIZATION TO 1804

Date	Place	President	Vice-Presidents	Corresponding Secretary	Secretary	Recording Secretary	Treasurer	Censors
Dec. 17, 1799, or April 16, 1800	Raleigh	Richard Fenner	Nathaniel Loomis John Claiborne	Calvin Jones		Wm. B. Hill	Cargill Massenburg	Sterling Wheaton James Webb Jas. John Pasteur Jason Hand
Dec. 1, 1800	Raleigh	Richard Fenner			Sterling Wheaton			
Dec. 1, 1801	Raleigh	John C. Osborne	Thomas Mitchell Richard Fenner	Calvin Jones	Sterling Wheaton		Cargill Massenburg	James Webb John Sibley
1802	Raleigh	John C. Osborne		Calvin Jones				
1803	Raleigh	John C. Osborne		Calvin Jones				
1804	Raleigh	John C. Osborne		Calvin Jones				

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1928
*Missing Data Not to be Found in Record

Date	Place of Meeting	Number in Attendance	President	Vice-Presidents*	Secretary	Treasurer*	Members on Roll*	Honorary Members*	Honorary Fellows*
1849	Raleigh	25	F. J. Hill	.....	W. H. McKee	.....	25	.....	.....
1 1850	Raleigh	21	E. Strudwick	F. J. Haywood, C. E. Johnson, J. E. Williamson, W. G. Thomas.	W. H. McKee	W. G. Hill	38	9	.....
2 1851	Raleigh	23	E. Strudwick	C. E. Johnson.	W. H. McKee	W. G. Hill	46	9	.....
3 1852	Wilmington	38	J. E. Williamson	Thomas N. Cameron, William G. Hill, Johnston B. Jones, N. J. Pittman.	E. B. Haywood	J. J. W. Tucker	72	12	.....
4 1853	Fayetteville	24	J. E. Williamson	William G. Hill, Johnston B. Jones. J. B. G. Myers, N. J. Pittman.	W. W. Harris	Daniel Dupree	80	14	.....
5 1854	Raleigh	37	J. H. Dickson	N. J. Pittman, J. B. G. Myers, J. Graham Tull, A. D. McLean.	S. S. Satchwell	Daniel Dupree	84	17	.....
6 1855	Salisbury	23	J. H. Dickson	J. Graham Tull, Owen Hadley, A. D McLean, Hugh Kelly.	S. S. Satchwell	J. B. Dunn	96	18	.....
7 1856	Raleigh	35	C. E. Johnson	Marcellus Whitehead, E. R. Gibson, Johnston B. Jones, O. F. Manson.	S. S. Satchwell	J. B. Dunn	101	22	.....
8 1857	Edenton	25	C. E. Johnson	Marcellus Whitehead, O. F. Manson, H. W. Faison, E. T. Gibson.	W. G. Thomas	J. B. Dunn	113	16	.....
9 1858	New Bern	69	W. H. McKee	Edward Warren, C. W. Graham, Caleb Winslow, A. B. Pierce.	W. G. Thomas	J. B. Dunn	172	18	.....
10 1859	Statesville	81	W. H. McKee	James G. Ramsey, P. E. Hines, J. R. Mercer, W. T. Howard.	W. G. Thomas	C. W. Graham	.....	.....	.....
11 1860	Washington	64	N. J. Pittman	P. T. Henry, R. H. Winborne, M. Whitehead, T. S. Leach.	W. G. Thomas	C. W. Graham	233	18	.....
12 1861	Morganton	23	N. J. Pittman	J. J. Summerell, C. T. Murphy, G. W. Hodges, W. A. B. Norcom.	W. G. Thomas	C. W. Graham	244	18	.....
13 1866	Raleigh	20	J. J. Summerell	E. Burke Haywood, R. H. Winborne, W. L. Barrow, J. W. Jones.	W. G. Thomas	C. W. Graham	.....	.....	.....
14 1867	Tarboro	41	W. G. Thomas	.....	S. S. Satchwell	C. W. Graham	288	11	.....
15 1868	Warrenton	27	S. S. Satchwell	Hugh Kelly, George A. Foote, Charles J. O'Hagan, J. H. Baker.	Thomas F. Wood	J. W. Jones	.....	.....	.....
16 1869	Salisbury	36	E. B. Haywood	Thomas E. Wilson, A. B. Pierce, C T. Murphy, M. A. Locke.	Thomas F. Wood	J. W. Jones	.....	.....	.....
17 1870	Wilmington	38	C. J. O'Hagan	E. A. Anderson, F. N. Luckey, W. R. Sharpe, R. L. Payne.	Thomas F. Wood	J. W. Jones	.....	.....	.....
18 1871	Raleigh	35	Hugh Kelly	D. N. Patterson, R. C. Pearson, J. B. Seavy, G. L. Kirby.	Thomas F. Wood	J. W. Jones	.....	.....	.....
19 1872	New Bern	34	W. G. Hill	H. W. Faison, R. I. Hicks, G. H. Macon, W. A. B. Norcom.	James McKee	J. W. Jones	.....	.....	.....

20	1873	Statesville	43	M. Whitehead	W. T. Ennett, William Little, Charles Duffy, T. P. Jerman.	James McKee	H. T. Bahnson	.....	.....	.....
21	1874	Charlotte	56	W. A. B. Norcom	J. B. Jones, R. F. Lewis, C. G. Cox, J. L. Knight.	James McKee	H. T. Bahnson	.....	.....	.....
22	1875	Wilson	60	J. W. Jones	Walker Debnam, J. A. Gibson, William Little, D. N. Patterson.	James McKee	H. T. Bahnson	148	5	.....
23	1876	Fayetteville	33	Peter E. Hines	J. H. Baker, G. G. Smith T. D. Haigh, J. K. Hall.	James McKee	H. T. Bahnson	157	4	.....
24	1877	Salem	42	George A. Foote	J. K. Hall, B. W. Robinson, A. Holmes, A. A. Hill.	James McKee	A. G. Carr	177	4	.....
25	1878	Goldsboro	79	R. L. Payne	E. M. Rountree, Richard Anderson, S. B. Flowers, L. A. Stith.	L. J. Picot	A. G. Carr	194	6	.....
26	1879	Greensboro	109	Chas. Duffy, Jr.	J. A. Gibson, Willis Alston, James McKee, A. A. Hill.	L. J. Picot	A. G. Carr	198	6	.....
27	1880	Wilmington	105	J. F. Shaffner	J. K. Hall, W. C. McDuffie, W. R. Wilson, R. F. Lewis.	L. J. Picot	A. G. Carr	225	6	.....
28	1881	Asheville	92	R. B. Haywood	J. E. McRee, W. H. Lilly, R. H. Speight, W. J. H. Bellamy.	L. J. Picot	A. G. Carr	254	6	.....
29	1882	Concord	65	Thos. F. Wood	T. J. Moore, D. J. Cain, S. E. Evans, John McDonald.	L. J. Picot	A. G. Carr	297	7	.....
30	1883	Tarboro	112	J. K. Hall	A. W. Knox, J. M. Hadley, E. S. Foster, John Whitehead.	L. J. Picot	A. G. Carr	310	7	.....
31	1884	Raleigh	112	A. B. Pierce	F. W. Potter, G. W. Graham, R. Dillard, G. W. Long.	L. J. Picot	A. G. Carr	348	7	.....
32	1885	Durham	173	W. C. McDuffie	James McKee, T. E. Anderson, W. H. Whitehead, A. G. Carr.	W. C. Murphy	R. L. Payne, Jr.	424	6	.....
33	1886	New Bern	113	Joseph Graham	H. T. Bahnson, L. J. Picot, J. L. McMillan, W. W. Faison.	J. M. Baker	C. M. Van Poole	438	7	.....
34	1887	Charlotte	112	H. T. Bahnson	G. G. Smith, J. L. Nicholson, C. M. Van Poole, H. B. Ferguson.	J. M. Baker	C. M. Van Poole	452	7	.....
35	1888	Fayetteville	133	T. D. Haigh	W. T. Ennett, J. A. Dunn, T. E. Anderson.	J. M. Baker	M. P. Perry	306	6	.....
36	1889	Elizabeth C.	50	W. T. Ennett	W. J. Jones, S. W. Stevenson, G. W. Long.	J. M. Baker	M. P. Perry	410	6	.....
37	1890	Oxford	160	G. G. Thomas	R. L. Payne, Jr., Richard Dillard, S. D. Booth.	J. M. Hays	M. P. Perry	414	6	.....
38	1891	Asheville	135	R. H. Lewis	S. W. Battle, J. L. Nicholson, W. H. Lilly.	J. M. Hays	M. P. Perry	422	6	.....
39	1892	Wilmington	162	W. T. Cheatham	T. S. Burbank, J. W. Long, W. H. H. Cobb, W. D. Hilliard.	J. M. Hays	M. P. Perry	431	6	.....
40	1893	Raleigh	221	J. W. McNeill	W. C. Galloway, H. H. Harris, J. M. Hadley, Thomas Hill.	R. D. Jewett	M. P. Perry	447	5	3

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 to 1926. *(Continued)*
*Missing Data Not to Be Found in Records

Date		Place of Meeting	Number in Attendance*	President	Vice Presidents	Treasurer	Secretary	Members on Roll	Honorary Members	Honorary Fellows
41	1894	Greensboro	166	W. H. H. Cobb	J. A. Hodges, R. W. Tate, Willis Alston. M. H. Fletcher.	R. D. Jewett	M. P. Perry	454	5	3
42	1895	Goldsboro	.....	J. H. Tucker	J. Howell Way, W. H. Harrell, O. McMullan, C. A. Misenheimer.	R. D. Jewett	M. P. Perry	436	7	3
43	1896	Winston-Salem	158	R. L. Payne	S. D. Booth, J. P. Munroe, J. A. Burroughs, J. E. Grimsley.	R. D. Jewett	M. P. Perry	452	7	3
44	1897	Morehead City	103	P. L. Murphy	J. C. Walton, A. A. Kent, M. R. Adams, B. L. Long.	R. D. Jewett	M. P. Perry	406	6	3
45	1898	Charlotte	.....	Francis Duffy	E. C. Register, A. T. Cotton, J. B. H. Knight, F. H. Russell.	R. D. Jewett	M. P. Perry	437	6	21
46	1899	Asheville	152	L. J. Picot	I. W. Faison, J. W. White. H. H. Dodson, W. C. Brownson.	Geo. W. Pressley	G. T. Sikes	489	6	16
47	1900	Tarboro	115	George W. Long	C. M. Van Poole, James M. Parrott, T. B. Williams, W. D. Hilliard.	Geo. W. Pressley	G. T. Sikes	482	6	21
48	1901	Durham	186	Julian M. Baker	M. H. Fletcher, C. A. Julian, D. A. Stanton, E. M. Summerell.	Geo. W. Pressley	G. T. Sikes	515	5	18
49	1902	Wilmington	147	Robert S. Young	A. G. Carr, E. D. Dixon-Carroll, I. M. Taylor, J. M. Parrott.	Geo. W. Pressley	G. T. Sikes	546	5	20
50	1903	Hot Springs	155	A. W. Knox	E. G. Moore, C. A. Julian, W. W. McKenzie, J. L. Nicholson.	J. Howell Way	G. T. Sikes	530	6	19
51	1904	Raleigh	326	H. B. Weaver	John Hey Williams, John C. Rodman, S. F. Pfohl.	J. Howell Way	G. T. Sikes	1,033	8	17
52	1905	Greensboro	361	David T. Tayloe	C. A. Julian, John T. Burrus, I. W. Faison.	J. Howell Way	G. T. Sikes	1,175	8	17
53	1906	Charlotte	406	E. C. Register	L. B. McBrayer, W. H. Cobb, Jr., W. O. Spencer.	J. Howell Way	G. T. Sikes	1,234	8	16
54	1907	Morehead City	217	Samuel D. Booth	C. M. Strong, J. E. McLaughlin, W. F. Hargrove.	David A. Stanton	H. McK. Tucker	888	7	16
55	1908	Winston-Salem	372	J. Howell Way	J. E. Stokes, J. A. Turner, W. H. Dixon.	David A. Stanton	H. McK. Tucker	998	7	28
56	1909	Asheville	337	J. F. Highsmith	C. M. Van Poole, D. A. Garrison, D. O. Dees.	David A. Stanton	H. McK. Tucker	1,067	7	25
57	1910	Wrightsville Beach	276	†J. A. Burroughs E. J. Wood	E. J. Wood, John Q. Myers, L. D. Wharton.	David A. Stanton	H. D. Walker	1,080	8	35
58	1911	Charlotte	412	C. M. VanPoole	J. V. McGougan, W. E. Warren, L. N. Glenn.	David A. Stanton	H. D. Walker	880	8	45
59	1912	Hendersonville	296	A. A. Kent	J. P. Munroe, W. P. Horton, J. G. Murphy.	David A. Stanton	H. D. Walker	950	8	44
60	1913	Morehead City	232	J. P. Munroe	F. R. Harris, E. S. Bullock, L. B. Morse,	John A. Ferrell	H. D. Walker	1,133	8	40
61	1914	Raleigh	431	J. M. Parrott	E. T. Dickinson, J. T. J. Battle, D. E. Sevier	John A. Ferrell	H. D. Walker	1,228	8	47
62	1915	Greensboro	443	L. B. McBrayer	J. J. Phillips, C. W. Moseley, S. M. Crowell.	John A. Ferrell	H. D. Walker	1,221	9	68

†Died during his term of office: succeeded by E. J. Wood, first vice-president.

63	1916	Durham	406	M. H. Fletcher	J. L. Nicholson, L. N. Glenn, W. H. Harrison.	Benj. K. Hays	W. M. Jones	1,228	10	79
64	1917	Asheville	280	Charles O'H. Laughinghouse	D. J. Hill, J. L. Spruill, J. H. Shuford.	Benj. K. Hays	W. M. Jones	1,271	11	81
65	1918	Pinehurst	291	I. W. Faison	Wm. deB. MacNider, Jos. B. Greene, Ben F. Royal.	Benj. K. Hays	W. M. Jones	1,087	11	81
						Secy-Treas.	Acting			
66	1919	Pinehurst	335	Cyrus Thompson	J. W. Halford, T. W. Davis, A. McN. Blair.	Benj. K. Hays	L. B. McBrayer	1,306	11	100
67	1920	Charlotte	479	C. V. Reynolds	H. D. Walker, F. Stanley Whitaker, Thos. I. Fox.	Benj. K. Hays	L. B. McBrayer	1,497	12	100
68	1921	Pinehurst	404	T. E. Anderson	C. S. Lawrence, W. H. Ward, J. M. Manning.	Benj. K. Hays	L. B. McBrayer	1,491	12	93
						Secretary-Treasurer				
69	1922	Winston-Salem	507	H. A. Royster	W. T. Parrott, B. C. Nalle, J. R. McCracken.	L. B. McBrayer		1,571	12	100
70	1923	Asheville	356	J. W. Long	F. M. Hanes, T. C. Johnson, B. L. Long.	L. B. McBrayer		1,592	9	101
71	1924	Raleigh	525	J. V. McGougan	J. L. Spruill, ‡Eugene B. Glenn, D. A. Garrison.	L. B. McBrayer		1,604	9	106
72	1925	Pinehurst	550	Albert Anderson	W. L. Dunn, A. E. Bell, K. G. Averitt.	L. B. McBrayer		1,657	10	116
73	1926	Wrightsville Beach	445	Wm. deB. MacNider	J. P. Matheson, W. W. Dawson, H. H. Bass.	L. B. McBrayer		1,663	10	107
74	1927	Durham	653	John Q. Myers	J. W. Carroll, A. Y. Linville, C. H. Cocke.	L. B. McBrayer		1,691	10	121
75	1928	Pinehurst	611	John T. Burrus	G. H. Macon, R. F. Leinbach, W. R. Griffin.	L. B. McBrayer		1,738	11	143
76	1929	Greensboro	671	Thurman D. Kitchen	Dr. W. L. Dunn,* Asheville; Dr. D. T. Taylor, Jr., Washington, Dr. W. D. James, Hamlet.	L. B. McBrayer		1,666	11	146

*Died during his term of office.

ROSTER OF MEMBERS OF THE VARIOUS BOARDS OF MEDICAL EXAMINERS OF THE STATE OF NORTH CAROLINA

FIRST BOARD

JAMES H. DICKSON, Wilmington 1859-1866
CHARLES E. JOHNSON, Raleigh 1859-1866
CALEB WINSLOW, Hertford 1859-1866
OTIS F. MANSON, Townsville 1859-1866
WILLIAM H. McKEE, Raleigh 1859-1866
CHRISTOPHER HAPPOLDT, Morganton 1859-1866
J. GRAHAM TULL, New Bern 1859-1866
SAMUEL T. IREDELL, Secretary 1859-1866

SECOND BOARD

N. J. PITTMAN, Tarboro 1866-1872
E. BURKE HAYWOOD, Raleigh 1866-1872
R. H. WINBORNE, Edenton 1866-1872
S. S. SATCHWELL, Rocky Point 1866-1872
J. J. SUMMERELL, Salisbury 1866-1872
R. B. HAYWOOD, Raleigh 1866-1872
M. WHITEHEAD, Salisbury 1866-1868
J. F. SHAFFNER, Salem 1868-1872
WILLIAM LITTLE, Secretary 1866-1867
THOMAS F. WOOD, Secretary, Wilmington 1867-1872

THIRD BOARD

CHARLES J. O'HAGAN, Greenville 1872-1878
W. A. B. NORCOM, Edenton 1872-1878
C. TATE MURPHY, Clinton 1872-1878
GEORGE A. FOOTE, Warrenton 1872-1878
J. W. JONES, Tarboro 1872-1878
R. L. PAYNE, Lexington 1872-1878
CHARLES DUFFY, JR., Secretary, New Bern 1872-1878

FOURTH BOARD

PETER E. HINES, Raleigh 1878-1884
THOMAS D. HAIGH, Fayetteville 1878-1884
GEORGE L. KIRBY, Goldsboro 1878-1884
THOMAS F. WOOD, Wilmington 1878-1884
JOSEPH GRAHAM, Charlotte 1878-1884
[1]ROBERT I. HICKS, Williamston 1878-1880
[2]RICHARD H. LEWIS, Raleigh 1880-1884
HENRY T. BAHNSON, Secretary, Salem 1878-1884

FIFTH BOARD

WILLIAM R. WOOD, Scotland Neck 1884-1890
AUGUSTUS W. KNOX, Raleigh 1884-1890
FRANCIS DUFFY, New Bern 1884-1890
PATRICK L. MURPHY, Morganton 1884-1890
WILLIS ALSTON, Littleton 1884-1890
J. A. REAGAN, Weaverville 1884-1890
W. J. H. BELLAMY, Secretary, Wilmington 1884-1890

SIXTH AND SEVENTH BOARDS

R. L. PAYNE, JR., Lexington 1890-1892
GEORGE W. PUREFOY, Asheville 1890-1892
GEORGE G. THOMAS, Wilmington 1890-1894
ROBERT S. YOUNG, Concord 1890-1894
WILLIAM H. WHITEHEAD, Rocky Mount 1890-1896
GEORGE W. LONG, Graham 1890-1896
L. J. PICOT, Secretary, Littleton 1890-1896
JULIAN M. BAKER, Tarboro 1892-1898
H. B. WEAVER, Secretary, Asheville 1892-1898
[3]J. M. HAYS, Greensboro 1894-1897
[4]KEMP P. BATTLE, JR., Raleigh 1897-1900

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[1]Resigned before expiration of term.
[2]Elected for unexpired term of Dr. Hicks.
[3]Died before the expiration of his term.
[4]Elected to serve unexpired term of Dr. Hays.

[1]THOMAS S. BURBANK, Wilmington....1894-1898
[2]WILLIAM H. H. COBB, Goldsboro....1898-1900
[1]RICHARD H. WHITEHEAD, Chapel Hill....1896-1898
[3]J. HOWELL WAY, Secretary, Waynesville....1898-1902
DAVID T. TAYLOE, Washington....1896-1902
THOMAS E. ANDERSON, Secretary, Statesville....1896-1902
[4]ALBERT ANDERSON, Wilson....1898-1902
[4]EDWARD C. REGISTER, Charlotte....1898-1902
[4]THOMAS S. McMULLAN, Hertford....1900-1902
[4]JOHN C. WALTON....1900-1902

EIGHTH BOARD

A. A. KENT, Lenoir....1902-1908
CHARLES O'H. LAUGHINGHOUSE, Greenville....1902-1908
M. H. FLETCHER, Asheville....1902-1908
JAMES M. PARROTT, Kinston....1902-1908
J. T. J. BATTLE, Greensboro....1902-1908
FRANK H. RUSSELL, Wilmington....1902-1908
[1]GEORGE W. PRESSLY, Secretary, Charlotte....1902-1906
[5]G. T. SIKES, Secretary, Grissom....1906-1908

NINTH BOARD

LEWIS B. McBRAYER, Asheville....1908-1914
JOHN C. RODMAN, Washington....1908-1914
WILLIAM W. McKENZIE, Salisbury....1908-1914
HENRY H. DODSON, Greensboro....1908-1914
JOHN BYNUM, Winston-Salem....1908-1914
J. L. NICHOLSON, Richlands....1908-1914
BENJ. K. HAYS, Secretary, Oxford....1908-1914

TENTH BOARD

ISAAC M. TAYLOR, Morganton....1914-1920
JOHN Q. MYERS, Charlotte....1914-1920
JACOB F. HIGHSMITH, Fayetteville....1914-1920
MARTIN L. STEVENS, Asheville....1914-1920
[6]CHARLES T. HARPER, Wilmington....1914-1915
[7]EDWIN G. MOORE, Elm City....1915-1920
[8]JOHN G. BLOUNT, Washington....1914-1920
HUBERT A. ROYSTER, Secretary, Raleigh....1914-1920

ELEVENTH BOARD

LESTER A. CROWELL, Lincolnton....1920-1926
WILLIAM P. HOLT, Duke....1920-1926
J. GERALD MURPHY, Wilmington....1920-1926
LUCIUS N. GLENN, Gastonia....1920-1926
CLARENCE A. SHORE, Raleigh....1920-1926
WILLIAM M. JONES, Greensboro....1920-1926
KEMP P. B. BONNER, Secretary, Morehead City....1920-1926

TWELFTH BOARD

W. HOUSTON MOORE, President, Wilmington....1926-1932
T. W. M. LONG, Roanoke Rapids....1926-1932
W. W. DAWSON, Grifton....1926-1932
PAUL H. RINGER, Asheville....1926-1932
J. K. PEPPER, Winston-Salem....1926-1932
FOY ROBERSON, Durham....1926-1932
JOHN W. McCONNELL, Secretary, Davidson....1926-1932

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[1]Resigned before the expiration of his term.
[2]Elected to serve the unexpired term of Dr. Burbank.
[3]Elected to serve the unexpired term of Dr. Whitehead.
[4]Elected for short term expiring in 1902.
[5]Elected to serve the unexpired term of Dr. Pressly.
[6]Died before the expiration of his term.
[7]Elected to serve the unexpired term of Dr. Harper.
[8]Died a few months before the expiration of his term; such a short time that the vacancy was not filled.

NOTE: In 1890 the Medical Society of the State of North Carolina adopted the plan of electing members of the Board in such a manner that the terms would expire at different intervals of two years. This practice was followed for twelve years, or until 1902, when the plan was abandoned; an equivalent of two legal terms of six years each. It is evident that the Society arranged to abandon the policy as early as 1898, as two members were elected for short terms, and two years later two other members were elected for still shorter terms. It is therefore impossible to separate the sixth and seventh Boards, since the membership was overlapping.

ROSTER OF MEMBERS NORTH CAROLINA STATE BOARD OF HEALTH FROM ORGANIZATION IN 1877 TO 1928

Name	Address	Appointed by	Term
S. S. Satchwell, M.D., President	Rocky Point	State Society	1877 to 1878
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1877 to 1878
Joseph Graham, M.D.	Charlotte	State Society	1877 to 1878
Charles Duffy, Jr., M.D.	New Bern	State Society	1877 to 1878
Peter E. Hines, M.D.	Raleigh	State Society	1877 to 1878
George A. Foote, M.D.	Warrenton	State Society	1877 to 1878
S. S. Satchwell, M.D., President	Rocky Point	State Society	1878 to 1884
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1878 to 1884
Charles J. O'Hagan, M.D., President	Greenville	State Society	1878 to 1882
George A. Foote, M.D.	Warrenton	State Society	1878 to 1882
Marcellus Whitehead, M.D.	Salisbury	State Society	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1878 to 1880
H. G. Woodfin, M.D.	Franklin	Gov. Z. B. Vance	1878 to 1880
A. R. Ledeux, Chemist	Chapel Hill	Gov. Z. B. Vance	1878 to 1880
William Cain, Civil Engineer	Charlotte	Gov. Z. B. Vance	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1881 to 1887
M. Whitehead, M.D., President	Salisbury	State Society	1881 to 1884
J. M. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1881 to 1883
William Cain, Civil Engineer	Charlotte	Gov. T. J. Jarvis	1881 to 1883
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1881 to 1883
J. W. Jones, M.D., President	Wake Forest	State Society	1883 to 1889
John McDonald, M.D.	Washington	State Society	1883 to 1889
S. H. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1883 to 1885
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1883 to 1885
Arthur Winslow, Civil Engineer	Raleigh	Gov. T. J. Jarvis	1883 to 1886
R. H. Lewis, M.D.	Raleigh	State Board of Health	1884 to 1886
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1885 to 1887
William D. Hilliard, M.D.	Asheville	State Society	1885 to 1891
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1885 to 1891
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1885 to 1887
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1885 to 1887
R. H. Lewis, M.D., Secretary	Raleigh	State Society	1887 to 1883
H. T. Bahnson, M.D., President	Winston	State Society	1887 to 1888
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1887 to 1889
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1887 to 1889
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1888 to 1891
J. L. Ludlow, Civil Engineer	Winston	Gov. A. M. Scales	1888 to 1891
J. H. Tucker, M.D.	Henderson	Gov. D. G. Fowle	1888 to 1891
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. D. G. Fowle	1889 to 1893
J. L. Ludlow, Civil Engineer	Winston	Gov. D. G. Fowle	1889 to 1892
J. A. Hodges, M.D.	Fayetteville	State Society	1889 to 1893
J. M. Baker, M.D.	Tarboro	State Society	1891 to 1893
J. H. Tucker, M.D.	Henderson	Gov. T. M. Holt	1891 to 1893
F. P. Venable, Ph.D. Chemist	Chapel Hill	Gov. T. M. Holt	1891 to 1892
J. L. Ludlow, Civil Engineer	Winston	Gov. T. M. Holt	1891 to 1897
Thomas F. Wood, M.D., Secretary*	Wilmington	State Society	1892 to 1897
George G. Thomas, M.D., President	Wilmington	State Board of Health	1891 to 1895
S. Westray Battle, M.D.	Asheville	State Society	1892 to 1895
W. H. Harrell, M.D.	Williamston	State Society	1893 to 1895
John Whitehead, M.D.	Salisbury	State Board of Health	1893 to 1895
W. H. G. Lucas	White Hall	Gov. Elias Carr	1893 to 1895
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1893 to 1895
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1893 to 1895
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1894 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
W. J. Lumsden, M.D.	Elizabeth City	Gov. Elias Carr	1895 to 1897
John Whitehead, M.D.	Salisbury	State Society	1895 to 1897
W. H. Harrell, M.D.	Williamston	State Society	1895 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1895 to 1897
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1897 to 1899
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1897 to 1899
Charles J. O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1897 to 1899
John D. Spicer, M.D.	Goldsboro	Gov. D. L. Russell	1897 to 1899
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1897 to 1899
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	1899 to 1901
A. W. Shaffer, Civil Engineer	Raleigh	Gov. D. L. Russell	1899 to 1901
Charles J. O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1899 to 1901
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1899 to 1901
Albert Anderson, M.D.	Wilson	Gov. D. L. Russell	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	

*Died in 1892, leaving a five-year unexpired term, which was filled by the Board.

MEMBERS STATE BOARD OF HEALTH—Continued

Name	Address	Appointed by	Term
George G. Thomas, M.D., President	Wilmington	State Society	1899 to 1901
S. Westray Battle, M.D.	Asheville	State Society	1899 to 1901
H. W. Lewis, M.D.	Jackson	State Society	1899 to 1901
H. H. Dodson, M.D.	Milton	State Society	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. C. B. Aycock	1901 to 1907
W. P. Ivey, M.D.	Lenoir	Gov. C. B. Aycock	1901 to 1907
George G. Thomas, M.D., President	Wilmington	Gov. C. B. Aycock	1901 to 1905
Francis Duffy, M.D.	New Bern	Gov. C. B. Aycock	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1901 to 1905
S. Westray Battle, M.D.	Asheville	State Society	1901 to 1907
H. W. Lewis, M.D.	Jackson	State Society	1901 to 1907
W. H. Whitehead, M.D.	Rocky Mount	State Society	1901 to 1905
J. L. Nicholson, M.D.	Richlands	State Society	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1903 to 1909
J. Howell Way, M.D.	Waynesville	Gov. R. B. Glenn	1905 to 1911
W. O. Spencer, M.D.	Winston	Gov. R. B. Glenn	1905 to 1911
George G. Thomas, M.D., President	Wilmington	State Society	1905 to 1911
Thomas E. Anderson, M.D.	Statesville	State Society	1905 to 1911
R. H. Lewis, M.D.	Raleigh	Gov. R. B. Glenn	1907 to 1913
E. C. Register, M.D.	Charlotte	Gov. R. B. Glenn	1907 to 1913
David T. Tayloe, M.D.	Washington	State Society	1907 to 1909
James A. Burroughs, M.D.[1]	Asheville	State Society	1907 to 1913
J. E. Ashcraft, M.D.	Monroe	State Board of Health	1909 to 1913
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. W. W. Kitchin	1909 to 1913
J. Howell Way, M.D., President	Waynesville	Gov. W. W. Kitchin	1911 to 1917
W. O. Spencer, M.D.	Winston-Salem	Gov. W. W. Kitchin	1911 to 1917
Thomas E. Anderson, M.D.	Statesville	State Society	1911 to 1917
Charles O'H. Laughinghouse, M.D.	Greenville	State Society	1911 to 1917
R. H. Lewis, M.D.	Raleigh	Gov. Locke Craig	1913 to 1919
Edw. J. Wood, M.D.	Wilmington	Gov. Locke Craig	1913 to 1919
A. A. Kent, M.D.[2]	Lenoir	State Society	1913 to 1915
Cyrus Thompson, M.D.	Jacksonville	State Society	1913 to 1919
Fletcher R. Harris, M.D.	Henderson	State Board of Health	1913 to 1919
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. Locke Craig	1915 to 1921
J. Howell Way, M.D., President	Waynesville	Gov. T. W. Bickett	1917 to 1923
E. C. Register, M.D.[1]	Charlotte	Gov. T. W. Bickett	1917 to 1923
Thomas E. Anderson, M.D.	Statesville	State Society	1917 to 1923
Charles O'H. Laughinghouse, M.D.	Greenville	State Society	1917 to 1923
Fletcher R. Harris, M.D.[3]	Henderson	State Society	1919 to 1923
A. J. Crowell, M.D.	Charlotte	Gov. T. W. Bickett	1919 to 1923
Chas. E. Waddell, C.E.[4]	Asheville	Gov. Cameron Morrison	1921 to 1923
Cyrus Thompson, M.D.	Jacksonville	State Society	1919 to 1925
R. H. Lewis, M.D.	Raleigh	Gov. T. W. Bickett	1919 to 1925
E. J. Tucker, D.D.S.	Roxboro	Gov. T. W. Bickett	1923 to 1925
J. Howell Way, M.D., President	Waynesville	Gov. Cameron Morrison	1923 to 1929
A. J. Crowell, M.D.	Charlotte	Gov. Cameron Morrison	1923 to 1929
James P. Stowe, Ph.G.	Charlotte	Gov. Cameron Morrison	1923 to 1927
D. A. Stanton, M.D.	High Point	State Board of Health	1923 to 1925
Thomas E. Anderson, M.D.	Statesville	State Society	1923 to 1929
Charles O'H. Laughinghouse, M.D.[5]	Greenville	State Society	1923 to 1929
Cyrus Thompson, M.D.	Jacksonville	State Society	1925 to 1931
D. A. Stanton, M.D.	High Point	State Society	1925 to 1931
R. H. Lewis, M.D.[1]	Raleigh	Gov. A. W. McLean	1925 to 1931
E. J. Tucker, D.D.S.	Roxboro	Gov. A. W. McLean	1925 to 1931
W. S. Rankin, M.D.[4]	Charlotte	State Board of Health	1926 to 1927
L. E. McDaniel	Jackson	State Board of Health	1927 to 1929
Dr. Chas. C. Orr	Asheville	Gov. A. W. McLean	1927 to 1929
Dr. Thomas E. Anderson	Statesville	State Society	1929 to 1935
Dr. L. E. McDaniel	Jackson	State Society	1929 to 1935

[1]Died leaving unexpired term.
[2]Resigned to become member of General Assembly.
[3]Resigned to become Health Officer Vance County.
[4]Resigned.
[5]Resigned to become Secretary of State Board of Health.

STATUS OF SOCIETY MEMBERSHIP BY COUNTIES FOR YEARS 1914-1928

County	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929
Alamance-Caswell *a*	9	10	12	10	15	27	27	31	27	27	25	27	30	30	32
Alexander *b*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Alleghany	2	2	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Anson	.....	.....	.....	1	3	2	1	2	12	12	11	10	6	8	8
Ashe	.....	.....	11	15	8	7	5	9	8	6	10	6	8	6	5
Avery	7	9	9	7	6	4	5	4	5	5	5	5	6	6	6
Beaufort	14	14	10	11	10	14	12	14	17	14	17	17	17	17	16
Bertie	3	3	3	5	5	10	9	12	10	9	9	8	8	8	6
Bladen	7	6	9	8	9	8	7	7	4	3	8	7	8	8	8
Brunswick	5	.....	.....	2	2	2	1	1	1	1	1	1	1	4	6
Buncombe	70	71	74	76	81	83	92	96	99	105	97	102	118	120	118
Burke	17	17	16	17	6	11	12	11	15	13	14	11	11	12	12
Cabarrus	23	25	20	22	19	20	19	21	23	19	21	21	22	27	27
Caldwell	11	7	9	13	12	10	10	12	12	10	11	14	15	15	13
Camden *c*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Carteret	7	9	7	4	7	9	9	8	12	10	10	12	12	11	11
Caswell *d*	1	1	1	1	3	2	2	1	1	1	2	.....	.....	.....	.....
Catawba	15	13	18	.....	5	18	16	22	20	19	16	16	21	16	17
Chatham	12	11	11	11	7	10	11	6	7	9	9	7	9	8	9
Cherokee	10	9	11	10	6	10	10	10	10	9	10	9	8	10	10
Chowan-Perquimans	7	4	3	.....	6	8	7	6	7	8	5	9	10	9	7
Clay *e*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland	13	13	16	16	17	19	16	19	18	18	17	19	20	20	22
Columbus	9	11	7	1	6	10	8	9	14	11	12	14	15	14	14
Craven	11	8	11	7	7	6	6	8	10	12	14	16	17	15	14
Cumberland	24	19	17	16	15	20	24	23	22	32	31	28	29	28	22
Currituck	7	6	6	1	5	5	5	5	4	4	4	4	3	2	1
Dare *f*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Davidson	13	9	20	20	19	18	16	18	18	22	20	19	19	18	17
Davie	.....	6	5	4	4	4	4	4	6	4	5	4	5	5	5
Duplin	4	7	10	9	9	10	12	11	12	12	13	13	13	9	11
Durham-Orange	40	41	44	35	33	45	40	43	43	47	53	60	64	63	65
Edgecombe	13	13	10	10	7	15	15	15	12	10	11	12	12	12	7
Forsyth	39	42	45	37	37	57	62	60	59	62	63	64	66	74	59
Franklin	12	11	10	11	11	12	10	12	12	12	12	12	10	12	11
Gaston	26	25	27	27	26	35	38	39	40	40	39	40	38	39	39
Gates	.....	.....	.....	.....	1	.....	.....	.....	1	1	1	.....	.....	1	2
Graham	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Granville	11	16	16	14	14	15	14	14	12	13	13	12	12	14	13
Greene	5	6	5	2	5	6	7	7	5	6	5	5	5	5	5
Guilford	71	66	68	67	72	77	78	80	87	93	107	112	119	123	130
Halifax	7	15	8	1	7	28	24	24	18	21	20	16	14	17	17
Harnett	17	15	17	15	14	16	15	16	15	15	13	12	16	16	15
Haywood	11	11	11	9	9	11	10	12	13	13	14	14	13	8	14
Henderson-Polk *g*	14	15	15	11	13	15	13	13	13	13	14	17	19	16	16
Hertford	4	1	5	10	10	10	10	10	10	10	8	8	7	7	6
Hoke	.....	.....	10	11	10	10	8	6	8	9	11	10	11	12	14
Hyde	.....	.....	.....	1	2	1	1	2	1	2	1	1	1	1	1
Iredell-Alexander	16	9	20	11	11	21	18	20	19	20	26	29	34	37	39
Jackson	5	2	5	2	5	5	6	6	6	8	7	7	6	5	6
Johnston	21	19	22	16	24	22	23	26	25	25	24	28	24	23	18
Jones	.....	.....	.....	.....	.....	.....	.....	1	2	1	4	4	3	3	3
Lee	7	8	8	6	8	8	8	10	10	11	13	13	13	14	16
Lenoir	14	15	16	15	17	22	19	20	17	20	18	20	22	23	20
Lincoln	14	11	9	11	15	16	14	13	14	16	11	11	12	13	14
Macon-Clay	5	5	4	6	6	6	7	7	7	7	6	8	8	9	6
Madison	11	9	10	.....	11	11	12	8	11	11	11	11	5	12	7
Martin	14	15	17	12	11	16	14	12	13	10	10	10	10	10	10
McDowell	7	7	8	7	6	6	5	5	6	7	8	7	8	7	9
Mecklenburg	71	74	63	49	97	104	107	110	115	109	121	117	104	119	125
Mitchell-Watauga	2	2	1	.....	4	5	8	10	10	7	7	8	7	9	8
Montgomery	10	9	9	8	6	8	11	10	9	9	8	9	9	10	11
Moore	15	18	10	15	16	16	17	21	20	20	19	21	17	20	22
Nash	18	26	27	21	26	25	26	30	30	33	34	32	31	30	30
New Hanover	33	41	30	29	38	40	46	51	46	44	42	40	41	38	32
Northampton	11	10	14	11	13	10	11	11	10	10	10	11	9	9	6
Onslow	8	9	11	7	9	8	7	7	5	6	6	5	5	6	5
Orange *h*	.....	.....	.....	.....	.....	.....	6	.....	.....	.....	.....	.....	.....	.....	.....
Pamlico	5	5	5	4	4	5	6	5	5	4	5	5	5	5	5
Pasquotank-Camden-Dare	15	17	19	16	15	16	11	19	18	17	18	19	18	16	14
Pender	.....	.....	.....	4	3	1	1	2	2	1	1	1	1	1	1
Perquimans *i*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Person	11	13	12	.....	12	10	11	10	10	10	8	7	7	7	6
Pitt	15	9	14	5	18	24	19	24	23	24	26	24	26	31	24
Polk *j*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	6	6	6
Randolph	14	11	13	11	12	13	15	14	14	13	14	12	10	11	10

STATUS OF MEMBERSHIP BY COUNTIES—(Continued)

County	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929
Richmond	13	13	14	11	13	12	14	13	14	16	19	18	18	18	14
Robeson	16	22	16	8	31	35	34	33	27	29	30	31	28	28	21
Rockingham	17	10	4	15	16	20	23	25	21	23	26	23	24	21	20
Rowan	22	25	23	22	24	28	31	32	32	36	40	40	40	42	35
Rutherford	19	21	14	17	18	20	12	18	22	21	21	22	24	22	22
Sampson	14	18	15	10	11	13	14	12	13	17	15	14	13	13	10
Scotland	12	12	13	10	9	10	12	12	12	12	12	12	12	12	12
Stanly	14	9	14	11	11	15	12	11	12	15	14	13	15	14	14
Stokes	13	12	10	5	5	10	6	12	9	10	10	5	7	8	6
Surry	19	18	23	24	27	28	25	25	24	26	22	17	20	22	20
Swain	.....	.....	6	7	2	3	1	4	3	1	1	1	.....	.....	.....
Transylvania	6	7	5	.....	1	1	1	5	6	4	8	4	5	7	4
Tyrrell *k*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Union	16	12	13	15	14	16	17	17	18	18	19	19	16	16	14
Vance	11	13	10	4	5	11	11	10	10	12	11	12	11	11	11
Wake	57	62	70	56	81	68	73	76	85	73	78	79	78	80	84
Warren	8	7	7	6	3	8	8	7	7	6	6	6	6	6	6
Washington-Tyrrell	.....	.....	.....	.....	.....	.....	10	9	9	9	8	8	6	6	5
Watauga *l*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wayne	7	17	19	18	27	28	24	33	32	29	32	34	32	38	38
Wilkes	7	6	9	8	10	10	11	10	10	10	10	9	14	11	10
Wilson	22	22	24	21	25	29	31	28	31	31	32	34	34	35	31
Yadkin	6	.....	.....	.....	10	2	5	4	3	2	3	2	2	3	5
Yancey	.....	.....	.....	.....	3	3	1	1	1	1	1	2	7	5	3
Totals	1221	1228	1271	1087	1306	1497	1491	1571	1592	1606	1657	1666	1691	1738	1669

a The figures for 1926 are for Alamance-Caswell; for the other years, for Alamance only; *b* See Iredell-Alexander; *c* See Pasquotank-Camden-Dare; *d* For 1926, see Alamance-Caswell; *e* See Macon-Clay; *f* See Pasquotank-Camden-Dare; *g* The figures for 1926 are for Henderson only; for the other years, for Henderson-Polk; *h* See Durham-Orange; *i* See Chowan-Perquimans; *j* See Henderson-Polk for 1912-1925; *k* See Washington-Tyrrell; *l* See Mitchell-Watauga.

HONORARY FELLOWS, MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Abel, J. F. ..... Waynesville
*Achorn, John W. ..... Pinebluff
Adams, M. R. ..... Statesville
Alexander, Chas. A. ..... Burlington
Alexander, Jas. R. ..... Charlotte
Allen, Rufus L. ..... Waynesville
*Alston, B. P. ..... Epsom
Ambler, C. P. ..... Asheville
Anderson, Albert ..... Raleigh
Anderson, Chas. A. ..... Burlington
Anderson, Thos. Eli ..... Statesville
*Archery, L. M. ..... Concord
*Asbury, F. E. ..... Asheboro
Ashworth, Benj. L. ..... Marion
Ashworth, W. C. ..... Greensboro
*Attmore, Geo. S. ..... Stonewall
*Bahnson, H. T. ..... Winston-Salem
Baker, J. M. ..... Tarboro
*Barrier, P. A. ..... Mt. Pleasant
Bass, H. H. ..... Durham
Battle, J. T. J. ..... Greensboro
*Battle, Kemp P. ..... Raleigh
*Battle, S. W. ..... Asheville
Beall, Wm. P. ..... Greensboro
*Bellamy, W. J. H. ..... Wilmington
Boddie, N. P. ..... Durham
*Bolton, Mahlon ..... Rich Square
*Booth, Samuel D. ..... Oxford
Brown, G. A. ..... Mt. Ulla
Brown, J. S. ..... Hendersonville
Brownson, W. C. ..... Asheville
*Bullock, D. W. ..... Wilmington
Burrus, John T. ..... High Point
Bynum, John ..... Winston-Salem
*Caldwell, D. G. ..... Concord
*Cheatham, Archibald ..... Durham
Cheesborough, Thos. P. ..... Asheville
*Clark, G. L. ..... Clarkton
Council, J. B. ..... Salisbury
*Covington, J. M. ..... Wadesboro
Cox, E. L. ..... Jacksonville
*Croom, J. D. ..... Maxton
Crowell, A. J. ..... Charlotte
Crowell, L. A. ..... Lincolnton
Daligny, Charles ..... Troy
*Dalton, David N. ..... Winston-Salem
Davis, Thomas W. ..... Winston-Salem
Davidson, John E. S. ..... Charlotte
DeArmon, J. McC. ..... Charlotte
*Denny, Wm. W. ..... Pink Hill
Dickinson, E. T. ..... Wilson
*Dillard, Richard, Jr. ..... Edenton
*Dodson, H. H. ..... Greensboro
*Duffy, Charles ..... New Bern
*Duffy, Francis ..... New Bern
Eddlerman, H. M. ..... Gastonia
Edgerton, Jas. L. ..... Hendersonville
*Edwards, G. C. ..... Hookerton
Edwards, J. D. ..... Siler City
Ellis, R. C. ..... Shelby
*Faison, I. W. ..... Charlotte
*Faison, Wm. W. ..... Goldsboro
*Fletcher, M. H. ..... Asheville
Flippin, Samuel T. ..... Siloam
*Fox, M. F. ..... Guilford College
*Freeman, Richard A. ..... Burlington
Galloway, W. C. ..... Wilmington
Garrison, David A. ..... Gastonia
Gibbon, Robert L. ..... Charlotte
*Gilmer, Chas. S. ..... Greensboro, R. 6
Gilreath, Frank H. ..... N. Wilkesboro
Goley, Wm. R. ..... Graham
*Goodman, E. G. ..... Lanvale
Goodwin, A. W. ..... Raleigh
Gouger, Geo. J. ..... Concord
Gove, Anna M. ..... Greensboro
Grady, James C. ..... Kenly
Grady, Wm. Earle ..... Tryon
*Graham, Joseph ..... Charlotte
Graham, Wm. A. ..... Charlotte
*Griffin, J. A. ..... Clayton
*Hall, Wright ..... Wilmington
*Halsey, B. F. ..... Roper
*Hargrove, R. H. ..... Robersonville
Harris, F. R. ..... Henderson
*Harris, I. A. ..... Weaverville
Harrison, Edmund ..... Greensboro
Harris, A. H. ..... Wilmington
Hays, Benj. K. ..... Fort Lyon, Colo. (Granville Co.)
*Haywood, F. J. ..... Raleigh
*Haywood, Hubert, Sr. ..... Raleigh
*Hicks, Wm. N. ..... Durham
Hicks, Romeo ..... Henrietta

*Deceased.

Highsmith, Chas. ..... Dunn
Highsmith, J. F. ..... Fayetteville
*Hill, L. H. ..... Germantown
Holt, Wm. T. ..... Greensboro
Houck, Albert F. ..... Lenoir
*Hudson, Wm. L. ..... Dunn
*Hughes, Francis W. ..... New Bern
Hunter, L. W. ..... Charlotte
Ingram, Chas. B. ..... Mt. Gilead
Irwin, J. R. ..... Charlotte
Jenkins, Chas. L. ..... Raleigh
Jewett, Robert D. ..... Wilmington
Johnson, N. M. ..... Durham
Jones, Clara E. ..... Goldsboro
Jones, A. G. ..... Walnut Cove
Jordan, Chas. S. ..... Asheville
Jordan, T. M. ..... Raleigh
Julian, Charles A. ..... Greensboro
Kent, Alfred A. ..... Winter Park, Fla.
Kerr, J. Edwin ..... Winston-Salem
*Knight, J. B. H. ..... Williamston
Knight, Wm. P. ..... Greensboro
Knox, A. W. ..... Raleigh
Koonce, S. E. ..... Wilmington
Lamm, Isaac W. ..... Lucama
Laughinghouse, Chas. O'H. ..... Raleigh
*Leggett, Kenelm ..... Hobgood
Lewis, Geo. W. ..... Wilson
Lewis, H. W. ..... Jackson
*Lewis, R. H. ..... Raleigh
Linville, A. Y. ..... Winston-Salem
*Long, Benj. L. ..... Hamilton
*Long, Geo. W. ..... Graham
Long, H. F. ..... Statesville
*Long, J. W. ..... Greensboro
*Love, W. J. ..... Wilmington
McAnally, W. J. ..... High Point
McBrayer, L. B. ..... Southern Pines
McCampbell, John ..... Morganton
*McDonald, A. D. ..... Wilmington
McGeachy, R. S. ..... Kinston
McGee, J. W. ..... Raleigh
*McKay, A. M. ..... Summerville
*McKay, John A. ..... Buies Creek
McKay, Joseph F. ..... Buies Creek
*McKee, James ..... Raleigh
*McKenzie, W. W. ..... Salisbury
McLaughlin, J. E. ..... Statesville
McMillan, Benj. F. ..... Red Springs
*McMillan, J. D. ..... Lumberton
*McMillan, J. L. ..... Red Springs
McMillan, W. D. ..... Wilmington
*McNeill, J. W. ..... Fayetteville
*McNeill, Wm. M. ..... Buies Creek
Manning, J. M. ..... Durham
Menzies, H. C. ..... Hickory
Michaux, E. R. ..... Greensboro
*Miller, J. F. ..... Goldsboro
*Minor, Chas. L. ..... Asheville
Misenheimer, C. A. ..... Charlotte
*Misenheimer, Theo. F. ..... Morven
*Monroe, W. A. ..... Sanford
Montgomery, John C. ..... Charlotte
Moore, C. E. ..... Wilson
Moore, Edwin G. ..... Elm City
Morris, J. A. ..... Oxford
Moseley, Chas. W. ..... Greensboro
Munroe, J. P. ..... Charlotte
Nelson, R. J. ..... Robersonville
Nisbet, W. O. ..... Charlotte
*Nicholson, J. L. ..... Richland
Nicholson, P. A. ..... Washington
Nicholson, Sam T. ..... Washington
Noble, R. J. ..... Selma
Parrott, J. M. ..... Kinston
*Pate, Wm. T. ..... Gibson
Pemberton, Wm. D. ..... Concord
Person, James B., Jr. ..... Selma
*Perry, M. P. ..... Macon
Pfohl, Samuel F. ..... Winston-Salem
*Pharr, T. F. ..... Concord
*Pharr, Wm. W. ..... Charlotte
*Phillips, Matthew D. ..... Dalton
*Picot, L. J. ..... Littleton
Pressly, G. W. ..... Charlotte
*Prince, D. M. ..... Laurinburg
Redding, Alex H. ..... Asheboro
*Register, Edw. C. ..... Charlotte
Reid, Geo. P. ..... Forest City
Reynolds, C. V. ..... Asheville
*Ritter, F. W. ..... Moyock
Rodman, J. C. ..... Washington
Rodwell, J. W. ..... Mocksville
Rogers, Wiley A. ..... Franklin
Royster, H. A. ..... Raleigh
Royster, W. I. ..... Raleigh

*Deceased.

Sawyer, C. J. ..... Windsor
Schaub, O. P. ..... Winston-Salem
Schonwald, J. T. ..... Wilmington
Sevier, D. E. ..... Asheville
Sevier, J. T. ..... Asheville
*Shaffner, J. F., Sr. ..... Winston-Salem
Shamburger, J. B. ..... Star
Sikes, G. T. ..... Creedmoor
*Smith, J. B. ..... Pilot Mountain
Smith, R. A. ..... Goldsboro
*Snipes, E. P. ..... Jonesboro
Spainhour, Ellis H. ..... Winston-Salem
*Speight, R. H., Sr. ..... Whitakers
Spencer, W. O. ..... Winston-Salem
Stamps, Thos. ..... Lumber Bridge
Stanton, D. A. ..... High Point
*Stevens, J. A. ..... Clinton
Stevens, M. L. ..... Asheville
Strickland, Edw. F. ..... Winston-Salem
Stringfield, Thos. ..... Waynesville
Strong, Chas. Moore ..... Charlotte
Summerell, E. M. ..... China Grove
*Summers, Chas. L. ..... Baltimore, Md. (Forsyth Co.)
Tayloe, D. T., Sr. ..... Washington
*Taylor, I. M. ..... Morganton
Tennent, G. S. ..... Asheville
*Thomas, G. G. ..... Wilmington
*Trantham, H. T. ..... Salisbury
*Tull, Henry ..... Kinston
Van Poole, C. M. ..... Salisbury
Vestal, W. J. ..... Lexington
*Von Ruck, Karl ..... Asheville
Ward, W. H. ..... Plymouth
*Way, J. Howell ..... Waynesville
Weaver, H. B. ..... Asheville
Wharton, L. D. ..... Smithfield
Whisnant, A. M. ..... Charlotte
*Whitaker, R. A. ..... Kinston
White, J. W. ..... Wilkesboro
*Whitehead, John ..... Salisbury
*Whitehead, W. H. ..... Rocky Mount
Whitfield, Wm. Cobb ..... Grifton
*Whittington, W. P. ..... Asheville
Williams, John D. ..... Guilford Station
*Williams, J. H. ..... Asheville
Wilson, A. R. ..... Greensboro
Wright, Jno. B. ..... Raleigh
Yarborough, Richard F. ..... Louisburg
*Young, R. S. ..... Concord

HONORARY MEMBERS, MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

*L. McL. Tiffany ..... Baltimore, Md.
W. W. Keen ..... Philadelphia, Pa.
J. Allison Hodges ..... Richmond, Va.
*R. L. Payne ..... Norfolk, Va.
*J. N. McCormack ..... Bowling Green, Ky.
R. L. Payne, Jr. ..... Norfolk, Va.
J. L. Ludlow, C. E. ..... Winston-Salem
Paul V. Anderson ..... Richmond, Va.
Stuart McGuire ..... Richmond, Va.
William J. Mayo ..... Rochester, Minn.
William Seaman Bainbridge ..... New York, N. Y.
William Sharpe ..... New York, N. Y.
William McKim Marriott ..... St. Louis, Mo.
James K. Hall ..... Richmond, Va.

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*Deceased.

OFFICERS 1928-1930

OFFICERS 1928-1929

President—Dr. Thurman D. Kitchin ..... Wake Forest
First Vice-President—Dr. W. L. Dunn* ..... Asheville
Second Vice-President—Dr. D. T. Tayloe, Jr. ..... Washington
Third Vice-President—Dr. W. D. James ..... Hamlet
Secretary-Treasurer—Dr. L. B. McBrayer *(1928-1931)* ..... Southern Pines

OFFICERS, 1929-1930

President—Dr. L. A. Crowell ..... Lincolnton
First Vice-President—Dr. W. B. Murphy ..... Snow Hill
Second Vice-President—Dr. Wm. E. Warren ..... Williamston
Third Vice-President—Dr. N. B. Adams ..... Murphy
Secretary-Treasurer—Dr. L. B. McBrayer *(1928-1931)* ..... Southern Pines

COUNCILORS, 1928-1931

First District—Dr. H. D. Walker ..... Elizabeth City
Second District—Dr. Grady G. Dixon ..... Ayden
Third District—Dr. J. B. Cranmer ..... Wilmington
Fourth District—Dr. W. H. Smith ..... Goldsboro
Fifth District—Dr. E. A. Livingston ..... Gibson
Sixth District—Dr. V. M. Hicks ..... Raleigh
Seventh District—Dr. T. C. Bost ..... Charlotte
Eighth District—Dr. R. B. Davis ..... Greensboro
Ninth District—Dr. M. R. Adams ..... Statesville
Tenth District—Dr. J. F. Abel ..... Waynesville

CHAIRMEN OF SECTIONS, 1929-1930

Public Health and Education—Dr. K. P. B. Bonner ..... Morehead City
Surgery—Dr. Robert W. James ..... Monroe
Eye, Ear, Nose and Throat—Dr. V. M. Hicks ..... Raleigh
Gynecology and Obstetrics—Dr. R. A. Ross ..... Durham
Pediatrics—Dr. Thos. M. Watson ..... Wilmington
Practice of Medicine—Dr. W. B. Kinlaw ..... Rocky Mount

DELEGATES TO AMERICAN MEDICAL ASSOCIATION, 1929-1931

Dr. John Q. Myers, 1929 ..... Charlotte
Dr. M. L. Stevens, 1929 ..... Asheville
Dr. Charles A. Woodward, 1929 and 1930 ..... Wilson
Dr. H. A. Royster, 1930 and 1931 ..... Raleigh
Dr. A. J. Crowell, 1930 and 1931 ..... Charlotte

ALTERNATES

Dr. J. R. McCracken, 1929 ..... Waynesville
Dr. D. W. Holt, 1929 ..... Greensboro
Dr. Joseph B. Greene, 1930 and 1931 ..... Asheville
Dr. L. W. Kornegay, 1930 and 1931 ..... Rocky Mount

DELEGATES TO MEDICAL SOCIETY OF VIRGINIA

Dr. B. C. Willis ..... Rocky Mount
Dr. W. W. Green ..... Tarboro

*Deceased.

Dr. L. J. Smith ..... Wilson
Dr. W. F. Cole ..... Greensboro
Dr. J. M. Williams ..... Warsaw
Dr. Frank Sabiston ..... Kinston
Dr. L. B. Evans ..... Windsor
Dr. W. W. Sawyer ..... Elizabeth City

DELEGATES TO SOUTH CAROLINA MEDICAL ASSOCIATION

Dr. J. L. Adams ..... Asheville
Dr. O. L. MacFadyen ..... Fayetteville
Dr. T. M. Watson ..... Wilmington
Dr. R. S. Beam ..... Lumberton
Dr. J. W. Davis ..... Statesville

DELEGATES TO GEORGIA STATE MEDICAL ASSOCIATION

Dr. W. G. Suiter ..... Weldon
Dr. E. A. Livingston ..... Gibson
Dr. F. L. Knight ..... Sanford

COMMITTEES

Medical Society Foundation

Dr. J. P. Matheson, Chairman, 1928-1933 ..... Charlotte
Dr. M. L. Stevens, 1928-1932 ..... Asheville
Dr. L. B. McBrayer, 1928-1931 ..... Southern Pines
Dr. Chas. O'H. Laughinghouse, 1928-1930 ..... Raleigh
Dr. J. B. Sidbury, 1929-1934 ..... Wilmington

Obituaries

Dr. C. M. Van Poole, *Chairman* ..... Salisbury
Dr. C. A. Julian ..... Greensboro
Dr. A. A. Kent ..... Winter Park, Fla.

Memorial for the North Carolina Physicians Who Died in the World War

Dr. J. P. Munroe, *Chairman* ..... Charlotte
Dr. A. J. Crowell ..... Charlotte
Dr. L. B. McBrayer ..... Southern Pines
Dr. J. M. Parrott ..... Kinston
Dr. John T. Burrus ..... High Point
Dr. Wilburt C. Davison ..... Durham

Public Health Administration

President State Board of Health, ex-officio, Dr. A. J. Crowell, *Chairman,* Charlotte; President State Board of Medical Examiners, ex-officio, Dr. W. Houston Moore, Wilmington; President North Carolina Hospital Association, ex-officio, Dr. D. A. Garrison, Gastonia.

Public Policy and Legislation

Dr. B. J. Lawrence, *Chairman* ..... Raleigh
Dr. K. P. B. Bonner ..... Morehead City
Dr. John T. Burrus ..... High Point

Committee on Package Libraries for Physicians

Dr. Foy Roberson, *Chairman* ..... Durham
Dr. W. C. Davison ..... Durham
Dr. Wm. DeB. MacNider ..... Chapel Hill

Moore County Medical Society Medal

Dr. W. C. Mudgett, *Chairman* ..... Southern Pines
Dr. J. M. Parrott ..... Kinston
Dr. John Q. Myers ..... Charlotte

Printing and Supplies

Dr. L. B. McBrayer, *Chairman* ..... Southern Pines
Dr. P. P. McCain ..... Sanatorium
Dr. J. W. Dickie ..... Southern Pines

Revision of Constitution and By-Laws

Dr. M. L. Stevens ..... Ahseville
Dr. J. M. Parrott ..... Kinston
Dr. L. B. McBrayer ..... Southern Pines

Harrison Narcotic Act

Dr. W. P. Holt, *Chairman* ..... Duke
Dr. Albert Anderson ..... Raleigh
Dr. William M. Coppridge ..... Durham
Dr. Thomas M. Parrott ..... Kinston
Dr. John Q. Myers ..... Charlotte

Committee on Hospitals

Dr. J. F. Highsmith, *Chairman* ..... Fayetteville
Dr. Henry F. Long ..... Statesville
Dr. J. T. Burrus ..... High Poiint
Dr. John Q. Myers ..... Charlotte

Arrangements

Dr. W. C. Mudgett, *Chairman* ..... Southern Pines
Place of Meeting ..... Pinehurst
Date ..... April 28, 29, 30, 1930
Headquarters ..... "The Carolina"

BOARD OF MEDICAL EXAMINERS OF THE STATE OF NORTH CAROLINA

President—W. Houston Moore, M.D. ..... Wilmington
Secretary-Treasurer—John W. MacConnell, M.D. ..... Davidson
Paul H. Ringer, M.D. ..... Asheville
Foy Roberson, M.D. ..... Durham
Thomas W. M. Long, M.D. ..... Roanoke Rapids
William W. Dawson, M.D. ..... Grifton
J. K. Pepper, M.D. ..... Winston-Salem

STATE BOARD OF EXAMINERS FOR NURSES

President—Miss E. A. Kelly, R.N. ..... Fayetteville
Secretary—Mrs. Dorothy Hayden Conyers, R.N. ..... Greensboro
Miss Lula West, R.N. ..... Mount Airy
Dr. R. W. Petrie (From Hospital Association) ..... Lenoir
Dr. Frank A. Sharpe (From Medical Society) 1928-1930 ..... Greensboro

TRANSACTIONS

OF THE

SEVENTY-SIXTH ANNUAL SESSION

OF THE

MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

GREENSBORO, APRIL 15, 16, 17, 1929

MINUTES OF HOUSE OF DELEGATES

MONDAY, APRIL 15, 1929

The House of Delegates met in the ballroom of the O. Henry Hotel at 8:15 p. m., and was called to order by the second vice-president, Dr. D. T. Tayloe, Jr., who announced that the president was detained by an engagement to deliver an address to the North Carolina Public Health Association and would deliver his message to the House of Delegates later.

The Secretary called the roll, and the following members were present:

ROLL CALL

County	*Delegate*
Alamance-Caswell	C. W. McPherson
Anson	C. I. Allen
Ashe	
Avery	
Beaufort	D. T. Tayloe, Jr.
Bertie	L. B. Evans
Bladen	
Brunswick	
Buncombe	M. S. Broun, C. V. Reynolds, Jos. B. Greene, Paul S. Ringer, J. LaB. Ward
Burke	
Cabarrus	P. R. McFadyen
Caldwell	R. W. Petrie
Carteret	Ben F. Royal
Catawba	
Chatham	
Cherokee	N. B. Adams

County	*Delegate*
Chowan-Perquimans	
Cleveland	
Columbus	
Craven	
Cumberland	J. F. Highsmith
Currituck	
Davidson	C. H. Phillips
Davie	
Duplin	J. D. Robinson
Durham-Orange	
Edgecombe	R. E. Broadway
Forsyth	A. Y. Linville, L. J. Butler
Franklin	
Gaston	McT. G. Anders
Gates	
Granville	B. K. Hays
Greene	W. W. Whittington
Guilford	D. W. Holt, B. R. Lyon, H. L. Brockmann, D. A. Stanton, Jos. L. Spruill
Halifax	T. W. M. Long
Harnett	Wm. P. Holt
Haywood	F. M. Davis
Henderson	
Hertford	
Hoke	L. B. McBrayer
Iredell-Alexander	M. R. Adams, T. E. Anderson
Jackson	
Johnston	
Jones	
Lee	
Lenoir	James M. Parrott
Lincoln	L. A. Crowell
McDowell	
Macon-Clay	
Madison	Eva M. Locke
Martin	Wm. E. Warren
Mecklenburg	John Q. Myers, John Kennedy, Jas. M. Northington, J. R. Shull, William Allen
Mitchell-Watauga	
Montgomery	
Moore	J. W. Dickie
Nash	
New Hanover	J. H. Hamilton
Northampton	L. E. McDaniel
Onslow	Cyrus Thompson

County	*Delegate*
Pamlico	O. C. Daniels
Pasquotank-Camden-Dare	C. B. Williams
Pender	
Person	
Pitt	Malcolm D. Thompson
Polk	
Randolph	
Richmond	W. D. James
Robeson	A. B. Holmes
Rockingham	J. B. Ray
Rowan	C. M. Van Poole
Rutherford	
Sampson	
Scotland	
Stanly	W. I. Hill
Stokes	
Surry	
Swain	
Transylvania	
Union	Raymond D. Pearson
Vance	H. A. Newell
Wake	John B. Wright, Albert Anderson, H. A. Royster
Warren	G. H. Macon
Washington-Tyrrell	
Wayne	W. H. Smith, L. W. Corbett
Wilkes	James H. McNeill
Wilson	Geo. W. Mitchell
Yadkin	
Yancey	

Dr. L. B. McBrayer, Secretary-Treasurer, read his report, which was referred to the Committee on Finance, and then read a supplementary report which received general discussion.

ANNUAL REPORT OF THE SECRETARY-TREASURER

1928-1929

To the House of Delegates of the Medical Society of the State of North Carolina:

Your secretary has to the best of his ability endeavored to discharge the duties enjoined upon him by the Constitution and By-Laws.

He has cooperated in every way possible with the President and all other officers of this society and with the officers of the District Societies and component societies. Much more could probably be accomplished if better cooperation were had upon the part of a goodly number of the county societies.

A meeting was called by President Kitchin in the city of Raleigh at the Sir Walter Hotel, at which were present the officers of the society, including the Council and the Chairmen of Sections and the Chairman of the Committee of Arrangements for this meeting. The main topic for consideration was the outline of program for this meeting. Careful consideration was given to every angle of the matter and free discussion was had, and the program as it appears was builded in accordance with decisions reached.

The Council held a meeting following and among other business transacted was the election of Dr. G. G. Dixon of Ayden, Councilor of the Second District, to the office of President of the Council.

Death has taken a large toll of our membership during the year and again taken some of the officers of our Society. While proper recognition of their passing, and proper eulogy of their life and accomplishments will be had at our memorial service tomorrow evening, conducted by our Obituary Committee, yet it seems fitting that we should call attention at this time to the members of our official family who have passed during the year—

Dr. W. L. Dunn, Asheville, First Vice President.

Dr. E. J. Wood, Wilmington, 57th President 1910, and member Committee Medical Society Foundation.

Dr. W. W. McKenzie, Salisbury, Member State Board of Medical Examiners, 1908-1914, Ninth Board.

Dr. J. W. McNeill, Fayetteville, 40th President 1893.

The Secretary has cooperated with the American Medical Association through its efficient secretary, Dr. Olin West, formerly secretary of the Tennessee State Medical Society, and its various councils and committees and attended a meeting of State Secretaries with the Officers and Board of Directors of the American Medical Association at our office building in Chicago, which two days meeting was for the purpose of discussing subjects and policies looking toward the improvement of organized medicine and the nearly 100,000 physicians in the United States who compose said organized medicine. Such meetings which are held annually are very helpful to the State Secretaries and also to the officers and directorate of the American Medical Association.

Our Ten District Medical Societies are functioning "better and better every day in every way" every year. Each and every one of them have fine programs and are well, not to say largely attended and are a credit to organized medicine and to the doctors who compose them. Dr. J. W. Davis of Statesville talks out loud and says that he has the best District Society meeting and he doesn't limit his assertion by any geographical boundaries, and the 150 doctors who sat down to his District Medical Society luncheon at Statesville with all the fixin's including after dinner speeches, serious and otherwise, would feel loath to dispute his claim. However, my understanding is that his claim is challenged by Dr. G. G. Dixon, Councilor of the Second District and Dr. J. F. Abel, Councilor of the Tenth District

and perhaps others, which proves my statement in regard to the splendid work being done by each of the District Medical Societies.

In the First District the county societies apparently make no pretense at holding meetings but instead the District Society holds four district meetings each year.

We attach hereto financial statement with proper certificates from the bank.

Respectfully submitted,
L. B. McBrayer,
Secretary-Treasurer.

FINANCIAL STATEMENT
APRIL 28, 1928, TO APRIL 13, 1929

RECEIPTS

Balance April 28, 1928	$ 587.45
Transferred from Savings	3,500.00
Interest on above	37.78
Sale Transactions	8.00
Dues Collected	4,845.00
Error in Check No. 481	.30
Dr. Bullitt for Col. Pyle	45.00
Miscellaneous Items sent A. M. A.	2.50
Total Receipts	$9,026.03

DISBURSEMENTS

Check No.	484—Edwards & Broughton, binding 4 vol. Transactions	$ 30.00
" "	485—Western Union, April messages	9.37
" "	486—Helen B. Eisenberger, extra work	100.00
" "	487—Miss Mary Robinson, expenses reporting	51.43
" "	488—Sandhill Citizen, printing section placards	10.50
" "	489—N. C. Tuberculosis Ass'n, check drawn in error	35.42
" "	490—N. C. Tuberculosis Ass'n, postage Nov. to April, '28	46.52
" "	491—Commercial Printing Co., printing '28 program	139.75
" "	492—Col. Will L. Pyle, expenses to Pinehurst	45.00
" "	493—Helen B. Eisenberger, meals Pinehurst meeting	8.00
" "	494—Master Reporting Company, 3 reporters	373.26
" "	495—Mrs. S. P. Sweringen, compiling roster for Trans.	38.00
" "	496—Mrs. Park W. Fisher, compiling copy for Trans.	21.56
" "	497—Miss Mary Robinson, reporting	130.05
" "	498—Middlemount Gardens, Inc., flowers Dr. Dunn	25.00
" "	499—D. G. Stutz, express	.60
" "	500—Western Union, May messages	23.59
" "	501—Miss Ethel Day, proofreading copy for Trans.	18.00
" "	502—Dr. L. B. McBrayer, postage Trans. returned	1.62
" "	503—Hursey & Co., Past President's Jewel	13.00
" "	504—Dr. L. B. McBrayer, salary May and June	100.00
" "	505—N. C. Tuberculosis Ass'n, extra steno. work	200.00
" "	506—D. G. Stutz, express, stationery	2.01
" "	507—Christian & King Printing Co., first installment on Transactions	1,000.00
" "	508—D. G. Stutz, express, stationery	1.35

"	"	509—Western Union, June messages	3.25
"	"	510—Dr. L. B. McBrayer, postage, Transactions returned	1.68
"	"	511—C. C. Kirby, indexing Transactions	50.00
"	"	512—C. L. Hayes, record book to register visitors	2.25
"	"	512—Christian & King, to apply on postage Transactions	150.00
"	"	514—Dr. L. B. McBrayer, salary July, Aug., Sept., Oct.	200.00
"	"	515—Dr. L. B. McBrayer, postage	2.50
"	"	516—Christian & King, balance on Transactions	1,513.23
"	"	517—Dr. L. B. McBrayer, postage	2.33
"	"	518—D. G. Stutz, express Transactions	2.98
"	"	519—Dr. L. B. McBrayer, postage	1.16
"	"	520—Western Union, August messages	.63
"	"	521—Dr. L. B. McBrayer, postage	55.05
"	"	522—Dr. L. B. McBrayer, postage	8.00
"	"	523—D. G. Stutz, express	3.03
"	"	524—D. G. Stutz, express	.64
"	"	525—Commercial Printing Co., treasurer's book	54.43
"	"	526—Christian & King, bal. Trans. and letterheads	172.82
"	"	527—Western Union, October messages	1.65
"	"	528—Western Union, November messages	.45
"	"	529—Dr. R. T. Hambrick, refund Dr. Shuford's dues	3.00
"	"	530—Dr. L. B. McBrayer, salary Nov. and Dec.	100.00
"	"	531—Sandhill Citizen, membership cards	12.50
"	"	532—State Committee on T. B. and Public Health	.64
"	"	533—Western Union, January messages	.30
"	"	534—Dr. L. C. Todd, refund Dr. J. H. Houck's dues	3.00
"	"	535—Dr. L. C. Todd, refund Dr. H. N. Abernathy's dues	3.00
"	"	536—Trans-Lux Daylight Screen Co., 2 screens	45.59
"	"	537—Western Union, February messages	5.62
"	"	538—Dr. L. B. McBrayer, salary Jan., Feb., Mar., April	200.00
"	"	539—Dr. T. C. Blackburn, refund Dr. Menzie's dues	3.00
"	"	540—Dr. L. B. McBrayer, postage programs	27.00
"	"	541—Mr. J. N. Powell, postmaster, postage	20.00
"	"	542—Mrs. Elizabeth P. Suggs, 4 days' services	15.40
"	"	543—D. G. Stutz, express programs	2.01
"	"	544—Dr. L. B. McBrayer, postage	15.00
"	"	545—Page Trust Co., certificate of deposit	3,000.00
"	"	546—N. C. Tuberculosis Ass'n, postage	41.95

Total Disbursements	$8,148.12
Cash Book Balance	877.91

Checks outstanding—

No. 197	$ 1.00	
" 351	3.00	
" 447	1.50	
" 542	15.40	
" 543	2.01	
" 544	15.00	
" 546	41.95	
Total		$ 79.86
Bank Balance		$ 957.77

DISTRIBUTION OF EXPENSES

Binding 4 volumes Transactions	$ 30.00
Col. Will L. Pyle, expenses	45.00
Cost of Sickness Pamphlets	.64
Expenses Registrar, Pinehurst	8.00
Express	12.62
Flowers, Dr. Dunn's funeral	25.00
Postage	222.81
Printing, new Treasurer's Book	54.43
Printing and mailing Transactions	2,836.05
Printing membership cards	12.50
Printing programs	139.75
Printing section meeting placards	10.50
Past President's Jewel	13.00
Reporting, editing, indexing, and reading proof Transactions	717.72
Record book for registering visitors	2.25
Refunded dues	12.00
Salary, Secretary-Treasurer	600.00
Stenographic help	315.40
Telegraph	44.86
Trans-Lux daylight screens	45.59
Transferred to Savings	3,000.00
Total	$8,148.12

April 13, 1929

This is to certify that the Medical Society of the State of North Carolina has on checking account $957.77 and Certificate of Deposit No. 1642 for $2,000.00 and Certificate of Deposit No. 1642 for $1,500.00 in this bank, total $4,457.77.

(Signed)

PAGE TRUST COMPANY,
By Francis Pleasants,
Assistant Cashier

REPORT OF THE SECRETARY, NO. 2

At the last meeting President Burrus in his message to the House of Delegates, reviewed the Glascock matter in much detail presenting correspondence had with Mr. J. W. Bailey, attorney for Dr. Glascock, and made specific recommendations in regard thereto, (see bottom of page 167, Transactions 1928). There was no equivocation and could be no misunderstanding as to his meaning. One thing was, that in certain events the "House of Delegates, now assembled, instruct the Secretary to take from the Wake County Society its charter."

The only action taken on the President's Message was the report of the Committee on the President's Message, page 214, Transactions 1928, Section Fifth and Sixth, which is as follows:

> "Fifth. We believe that the president's interpretation as to the functions and the final authority of the board of councilors

is correct, and we are of the opinion that the House of Delegates should sustain him in this interpretation.

Sixth. We are of the opinion that the welfare of the profession and the dignity and honor of the Medical Society of the State of North Carolina demand that every county society shall bow to and abide by the decision of the council and that the charter of any county society which shall refuse to conform to this fundamental law shall be revoked." Which was unanimously adopted.

The Secretary was advertent to the fact that only the House of Delegates can charter a component society and only the House of Delegates can revoke the charter of a component society, and his interpretation further was and is that the report of the Committee on the President's Message dealt entirely in generalities, and had it desired to activate the specific recommendation of President Burrus, it would of necessity had to introduce and have passed by the House of Delegates, a specific resolution at least naming the particular society whose charter it desired to reclaim and instructing the Secretary in the premises.

The Secretary therefore decided that he had no instructions from the House of Delegates in regard to carrying out the recommendation of President Burrus and therefore had no duties to perform in connection therewith and has governed himself accordingly.

On account of the fact that President Kitchin was and is a member of the Wake County Medical Society, the Secretary did not feel inclined to embarrass him by referring the matter to him and therefore acted on the matter on his own initiative and the Secretary is deserving and accepts whatever blame or praise that may attach.

L. B. McBrayer,
Secretary-Treasurer

At this point the President, Dr. Thurman D. Kitchin, assumed the chair and read his message to the House of Delegates, which, on motion of Dr. K. P. B. Bonner, was referred to a committee, the committee being composed of Drs. G. H. Macon, A. B. Holmes, and K. P. B. Bonner.

PRESIDENT'S MESSAGE

Dr. Thurman D. Kitchin

To the House of Delegates of the Medical Society of the State of North Carolina:

I do not think it necessary to give you the details of the activities of your President during the past year. I am sure you will believe me when I say that every act and utterance of mine has been motivated by what I thought to be for the welfare of the doctors of this State, collectively and individually. The promotion of the medical profession of the State has been my guiding purpose throughout the year. I have made many mistakes, but they have been mistakes of the head and not of the heart.

There are only a few matters which I want to call to your attention.

On page 85 of the Transactions of the Medical Society of the State of North Carolina, Durham, N. C., 1927, it is stated that: "Hitherto, there has not been established a clean-cut, always visible line agreed upon by the Board of Health on the one side and the physicians in active practice on the other, the line giving definition to the confines of the specialty of preventive medicine, if specialty it is.

1. "Do we need definite expressions whereby the profession in a given community will be enabled to say to the Board of Health, 'Thus far shalt thou go, and no further?'

2. "Shall it be agreed that whatever the profession can do better than the State, that the profession should do?

3. "Shall it be agreed that whatever the State or a group of private citizens in conjunction with the State can do better than the profession is doing, that the State should do, even though it infringes a bit on the preserves of curative medicine?

"The Executive Officer of the Board of Health is requesting that your President direct your committee on public health administration to formulate a definite policy regarding this problem and to submit said policy to your House of Delegates for adoption."

Concerning matters of public health, between the duties of the State and the duties of the private physician, there is a twilight zone in which the two fields merge so imperceptibly that it is difficult to say where the province of one ends and the other begins. But in order to have a working basis there should be established some line of demarcation. I believe the province of the State is the prevention of disease and that of the private physician the treatment of disease. The State should transcend this only when it is for educational purposes or as a demonstration to arouse interest and enthusiasm in the community as to the value of such treatment or as a safeguard to prevent an impending epidemic. That is, the State should engage in the practice of medicine only when the condition at hand can be handled in mass. Measures of a general character, as instruction in sanitation, or even examination, are in a group which can be handled by the State, but matters that require individual treatment belong to the private physician because here treatment must be followed up and varied according to the needs of the individual patient.

Unless some principle of this kind can be agreed upon, the activities of the State in health matters would be limited only by the discretion of the personnel of the State Board of Health.

This principle would not apply to State institutions, such as the Hospital for the Insane, the Blind, the Tuberculous, and the Feeble-minded, because one of the duties of the Government, as an agency of the people, is to furnish such protection to the people as they cannot provide for themselves. In these instances there is not only protection, but the State furnishes an environment, and a type of care which cannot

reasonably be provided in private homes and general hospitals even under the direction of competent physicians.

I am calling this to your attention and am expressing the opinion that the prolongation of lives, the prevention of disease, the furtherance of sanitation, health education and personal hygiene is the collective and individual duty and responsibility of all physicians and the health workers. And in this undertaking, the physicians and health workers should be of one mind and purpose, both professionally and from the standpoint of citizenship.

The State, County and Municipal Boards of Health should lead the way in this endeavor and the profession should cooperate whenever and wherever possible; the treatment of disease in the individual is the right and province of practicing physicians and should be so considered by health workers, health organizations and the State; county charges such as are found in prisons, county homes and the like should be treated by physicians other than whole-time County Health Officers. Physicians engaged in the specialty of health work should not treat disease except in those cases where treatment is essential to checking the spread of communicable disease and where treatment is carried on for the purposes of education after being endorsed by the medical profession.

I am recommending that State, County and Municipal Boards of Health be appraised of these facts by such resolutions as can be prepared by your committee and endorsed by the House of Delegates.

Just one other suggestion: There are a great many organizations in our state and all of them so far as I know, accomplishing much good, as examples: The Woman's Club, the Parent-Teachers Association, et cetera. I have the thought that our Medical Society ought to offer to their state organizations any help, scientific or otherwise, that we might be able to give and that we ought to have in our machinery provision for such. Naturally our County Societies would offer their local organizations the same service, receiving such aid as they might feel in need of from our state officers.

This should also be extended to all organizations of whatsoever kind, official, voluntary, social or what not.

It is not amiss to state as an example, that the State Board of Health felt in need of the backing of this Society during the past year, and called on your President and Secretary and we cooperated as requested, notwithstanding we had some doubt as to our authority to speak for the Society.

I therefore recommend that the present committee on Revision of our Constitution and By-Laws, be authorized and requested to provide the machinery for carrying into effect the foregoing suggestions.

The President appointed the following Committee on Finance: Drs. C. V. Reynolds, J. W. Dickie, and N. B. Adams.

Dr. L. B. McBrayer, Secretary of the Committee on Medical Society Foundation, read the report of the committee, which was accepted.

REPORT OF COMMITTEE ON MEDICAL SOCIETY FOUNDATION

Your committee met at the Sir Walter Hotel in Raleigh and elected the following officers: J. P. Matheson, Chairman; L. B. McBrayer, Secretary. We had with us on invitation, Hon. Gilbert Stevenson, in charge of the Foundation for the Wachovia Bank and Trust Company and he agreed to give out some newspaper publicity in regard to same and also to prepare a writeup of the Foundation for the Wachovia *Trade Journal,* which was later done and distributed by the Wachovia Bank to their mailing list and by the Secretary of this committee to all the doctors in the state.

There have been no contributions to this fund up to this time as we are advised by Mr. Stevenson, but are informed, however, that some life insurance has been made payable to this Foundation and also some wills have set apart funds that will go to this Foundation.

Respectfully submitted,

J. P. Matheson, M.D., Chairman, Charlotte,
M. L. Stevens, M.D., Asheville,
L. B. McBrayer, M.D., Southern Pines, Sec.,
Chas. O'H. Laughinghouse, M.D., Raleigh

REPORT OF COMMITTEE ON MEMORIAL FOR THE NORTH CAROLINA PHYSICIANS WHO DIED IN THE WORLD WAR

Dr. L. B. McBrayer, a member of the committee, stated that the committee has in mind placing a memorial in the medical school of Duke University, but the building has not advanced to the point that this can be done. He asked that Dr. Wilburt C. Davison, dean of Duke University Medical School, be added to the committee, and the President made this appointment.

REPORT OF COMMITTEE ON PUBLIC POLICY AND LEGISLATION

Dr. K. P. B. Bonner presented the following report:

There was only one matter coming up during the 1929 session of the General Assembly of North Carolina which required the attention of this committee. That was Senate Bill No. 540, proposing to license one Bob Roberts, of Madison County, to practice medicine and surgery without a license from the State Board of Medical Examiners of North Carolina The bill was introduced by Senator Plemmons, of Madison County, after Dr. McBrayer, Dr. Parrott, and I had had a conference with him. It seemed that Senator Plemmons had the idea that a license might be issued to the applicant merely upon the introduction of the bill or upon the threat of its introduction, but the committee could not assure him that the board would issue a license. Senator Plemmons thereupon introduced

the bill, which was referred to the committee on health and never reported out by the committee. That was the extent of the legislative activities of the committee.

During the last session of the General Assembly there were the fewest bills introduced regarding medical licensure that have ever been introduced.

The committee could make no progress in regard to the $25.00 license fee, because the General Assembly was searching for new and more prolific sources of revenue.

The report of the committee was accepted.

REPORT OF COMMITTEE ON STANDARDIZATION OF SPECIALTIES

Dr. C. S. Lawrence stated that the committee had no further report to make other than that made last year and that anyone desiring to take up the study of a specialty can get all information from the Council on Medical Education of the American Medical Association.

The report was accepted and the committee discharged.

REPORT OF COMMITTEE ON PRINTING AND SUPPLIES

Dr. L. B. McBrayer, Chairman, stated that the contracts for all printing had been let to the lowest bidders, some good bids having been received.

REPORT OF COMMITTEE ON REVISION OF CONSTITUTIOIN AND BY-LAWS

Dr. J. M. Parrott presented the following report:

The Committee on Revision of Constitution and By-Laws beg to report the following:

We recommend that the amendments to the Constitution on page 235, bottom of page, and top of page 236, 1928 Transaction, and amendment to the By-Laws on page 235 be adopted.

(Signed)
M. L. Stevens,
J. M. Parrott,
L. B. McBrayer,
Committee.

Dr. Parrott yielded the floor for questions, and questions were asked by Drs. C. B. Williams, N. B. Adams, V. M. Hicks, Paul H. Ringer, G. H. Macon, and H. A. Newell.

Dr. James M. Northington moved that the President be relieved of the chair during the presentation of a motion to act on the report of the committee and that the chair be assumed by Dr. W. D. James, Third Vice-President, stating that he offered this motion at the suggestion of President Kitchin and on his request. The motion was seconded and carried, and Dr. James took the chair.

Dr. Northington then moved that the report of the committee be accepted and adopted, which motion was seconded by Drs. John B. Wright and Cyrus Thompson and by others. The report was discussed by Drs. C. B. Williams, K. P. B. Bonner, R. B. Davis, G. G. Dixon, again by Dr. Williams, and by Dr. James. The Chair then submitted the motion for the adoption of the report to vote, and it was carried.

The President then resumed the chair.

Dr. Parrott then presented the following as a second report of the committee; and, on motion of Dr. K. P. B. Bonner, it was accepted, to follow the usual course.

COMMITTEE ON REVISION OF CONSTITUTION AND BY-LAWS REPORT 2

The committee has given careful study to the Constitution and By-Laws and has added amendments, which we believe will bring our Constitution and By-Laws up to date in a correct and usable manner. The draft of the new Constitution and By-Laws is attached hereto and the committee offer the following:

RESOLVED, that the Constitution and By-Laws of the Medical Society of the State of North Carolina hereto attached, be substituted for the Constitution and By-Laws of the Medical Society of the State of North Carolina as now existing.

We move the adoption of the resolution with the understanding that the motion lie over until the next annual meeting, according to law.

(Signed)

M. L. Stevens,
J. M. Parrott,
L. B. McBrayer,
Committee.

CONSTITUTION AND BY-LAWS

OF THE

MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

APPROVED BY THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA AT THE ANNUAL SESSION IN HOT SPRINGS, NORTH CAROLINA, JUNE 2, 1903

REVISED AT THE SEVENTY-SECOND ANNUAL SESSION, PINEHURST, APRIL 28, 1925

REVISED AT THE SEVENTY-SEVENTH ANNUAL SESSION, PINEHURST, APRIL 28, 1930

Adopted at the Fiftieth Annual Session, Hot Springs, N. C., June 3, 1903 and Revised at Seventy-Second Annual Session, Pinehurst, April 28-29, 1925 and Revised at Seventy-Seventh Annual Session, Pinehurst, April 28th, 1930

ARTICLE I.—Title of the Society

The name and title of this organization shall be "The Medical Society of the State of North Carolina."

ARTICLE II.—Purposes of the Society

The purpose of this Society shall be to federate and bring into one compact organization the entire medical profession of the State of North Carolina, and to unite with similar organizations in other states to form the American Medical Association; with a view to the extension of medical knowledge, and to the advancement of medical science; to the elevation of the standard of medical education, and to the enactment and enforcement of just medical laws; to the promotion of friendly intercourse among physicians, and to the guarding and fostering of their material interests; and to the enlightenment and direction of public opinion in regard to the great problems of state medicine and public health, so that the profession shall become more capable and honorable within itself, and more useful to the public in the prevention and cure of disease, and in prolonging and adding comfort to life.

ARTICLE III.—Component Societies

Component societies shall consist of those county medical societies which shall hold charters from this State Society.

ARTICLE IV.—Composition of the Society

Section 1. This Society shall consist of Fellows, Delegates, Guests, Honorary Members, and Honorary Fellows.

Sec. 2. Fellows.—The Fellows of this Society shall be the members of the component county medical societies, and those who are not members of any County Society who are recommended by the Board of Councilors.

Sec. 3. Delegates.—Delegates shall be those Fellows who are elected in accordance with this Constitution and By-Laws to represent their respective component county societies in the House of Delegates of this Society.

Sec. 4. Guests.—Any distinguished physician not a resident of this State may become a guest during any annual session upon invitation of the Society, and shall be accorded the privilege of participating in all of the scientific work for that meeting.

Sec. 5. The Honorary Members shall consist of such regular physicians as have won distinction by their contributions to medical science; those elderly physicians who, prior to their retirement from practice, have displayed a proper interest in the welfare of this Society, or who, by their example, have reflected credit and honor upon the profession. They must be nominated by the Council and receive a two-thirds vote of the members of the House of Delegates present at the meeting at which their names are presented for election. They shall be exempt from all dues and fines, and shall be entitled to all the privileges of the Society, except the right to vote and hold office.

Sec. 6. The Honorary Fellows shall consist of such physicians as have been Fellows of this Society continuously for thirty years, and whose dues have been paid during that time. They shall be exempt from all dues and fines, and shall be entitled to all the privileges enjoyed by active Fellows in good standing.

ARTICLE V.—House of Delegates

The House of Delegates shall be the legislative and business body of the Society, and shall consist of (1) delegates elected by the component county societies, and (2) ex-officio the officers of the Society as defined in this Constitution.

ARTICLE VI.—Sections and District Societies

The House of Delegates may provide for a division of the scientific work of the Society into appropriate sections, and for the organization of such councilor district societies as will promote the best interests of the profession, such societies to be composed exclusively of members of component county societies.

ARTICLE VII.—Meetings and Sessions

Section 1. The Society shall hold an annual meeting, during which there shall be held daily not less than one general session, which shall be open to all registered Fellows.

Sec. 2. The time and place for holding each annual meeting shall be fixed by the House of Delegates, but in case a change of time or place or both should be considered necessary, the executive committee shall have authority in the premises.

ARTICLE VIII.—Officers

Section 1. The officers of this Society shall be a President, President-elect, two Vice-Presidents, and ten Councilors. The foregoing shall constitute the Executive Committee.

Sec. 2. The President, President-elect and Vice-Presidents shall be elected for a term of one year. The Secretary-Treasurer and Councilors shall be elected for terms of three years each. All of these officers shall serve until their successors are elected and installed.

Sec. 3. The officers of this Society shall be elected by ballot, a majority of the votes cast being necessary to elect, by the House of Delegates on the second day of the annual session, however, when the nominating committee presents its recommendations for officers with only one name for each office and there are no other nominations, the vote may be taken viva voce. No Delegate shall be eligible to any office named in the preceding section, except that of Councilor, and no person shall be

elected to any such office who is not in attendance upon the annual meeting and who has not been a member of the Society for the past three years. Any nominee for the office of President or President-elect shall have been an active member of the Society for five years, including the year of his election, shall have attended two of three meetings immediately preceding his nomination, including the meeting at which he is nominated, and shall be a Fellow in good standing at the time of his nomination.

ARTICLE IX.—The Board of Medical Examiners, and Etc.

Section 1. The seven members of the "Board of Medical Examiners of the State of North Carolina" shall be elected by ballot in general session for a term of six years, a majority of the votes cast being necessary to a choice. The election shall be held on the second day of the annual meeting, and the balloting shall continue until the entire number is elected.

Sec. 2. A vacancy occurring from any cause other than expiration of term of office shall be filled by the Board or a quorum thereof.

Sec, 3. The elective members of the State Board of Health, and of the State Board of Examiners for Nurses, shall be elected by ballot on the second day of the annual meeting, in general session.

ARTICLE X.—Funds and Expenses

Funds for meeting the expenses of the Society shall be arranged for by the House of Delegates by an equal per capita assessment upon each county society, to be fixed by the House of Delegates, by voluntary contribution, and from the profits of its publications. Funds may be appropriated by the House of Delegates to defray the expenses of the annual meeting, for publication, and for such other purposes as will promote the welfare of the Society, the profession, and the people of the State.

ARTICLE XI.—Referendum

The general session of the Society may, by a two-thirds vote, order a general referendum upon any question pending before the House of Delegates, and the House of Delegates may, by a similar vote of its own members, or after a like vote of the general session, submit any such question to the membership of the Society for a final vote; and if the persons voting shall comprise a majority of all the members of the Society, a majority of such votes shall determine the question, and be binding upon the House of Delegates. The House of Delegates may refer a matter to the general session, in which case a majority of such votes present and voting shall determine the question.

ARTICLE XII.—The Seal

The Society shall have a common seal, with power to break, change or renew the same at pleasure.

ARTICLE XIII.—Amendments

The House of Delegates may amend any article of this Constitution by a two-thirds vote of the delegates registered at that annual meeting, provided that such amendment shall have been presented in open meeting at the previous annual meeting, and that it shall have been sent officially to each component county society at least two months before the session at which final action is to be taken.

BY-LAWS

CHAPTER I.—Fellowship

Section 1. All members of the component county medical societies and all Fellows of this Society who have been made Fellows by the Council, and have paid their annual dues for the current year, shall be privileged to attend all sessions and take part in all the proceedings of the annual meeting, and shall be eligible to any office within the gift of the Society.

Sec. 2. The name of a physician upon the properly certified roster of Fellows of this Society, as reported by the component medical society, or the name of a physician enrolled on the record of the secretary of this society after having been admitted by the Council, and whose annual assessments have been paid for the current year, shall be prima facie evidence of his right to register.

Sec. 3. No person who is under sentence of suspension or expulsion from this Society or from any component society of this Society, or whose name has been dropped from its roll of members, shall be entitled to any of the rights or benefits of this Society, nor shall he be permitted to take any part in any of its proceedings until such time as he has been relieved of such disability.

Sec. 4. Each member in attendance at the annual meeting shall enter his name on the registration book. When his right to fellowship has been verified by reference to the record of the Secretary of this Society, he shall receive a badge, which shall be evidence of his right to all the privileges of fellowship at that meeting. No Fellow or delegate shall take part in any of the proceedings of an annual meeting who has not complied with the provisions of this section.

CHAPTER II.—Annual and Special Meetings of the Society

Section 1. The Society shall hold an annual meeting at such time and place as has been fixed at the preceding annual meeting, but in case a change of time or place or both should be considered necessary, the executive committee shall have authority in the premises.

Sec. 2. Special sessions of either the Society or House of Delegates shall be called by the President at his discretion, or upon petition of twenty delegates, or upon request of the council or executive committee.

CHAPTER III.—General Sessions

Section 1. The general sessions shall include all registered Fellows, delegates, members, and guests, who shall have equal rights to participate in the proceedings and discussions; and, except guests and honorary members, to vote on pending questions. Each general session shall be presided over by the President, or in his absence or disability, or by his request, by one of the Vice-Presidents. Before it, at such time and place as may have been arranged, shall be delivered the annual address of the President, and the entire time of the session, so far as may be, shall be devoted to papers and discussions relating to scientific medicine.

Sec. 2. The general session, the House of Delegates and ad interim the executive committee, shall have authority to create committees or commissions for scientific investigations of special interest and importance to the profession and public, and to receive and dispose of reports of the same; but any expense in connection therewith must first be approved by the House of Delegates, or by the Executive Committee.

Sec. 3. Except by special vote, the order of exercises, papers and discussions as set forth in the official program shall be followed from day to day until it has been completed.

Sec. 4. No address or paper before the Society, except that of the President, shall occupy more than fifteen minutes in its delivery; and no Fellow shall speak

longer than five minutes, nor more than once on any one subject except by unanimous consent: Provided, that the terms of this section shall not apply to invited guests.

Sec. 5. All papers read before the Society shall be its property. Each paper shall be deposited with the Secretary-Treasurer when read, and if this is not done it shall not be published.

CHAPTER IV.—House of Delegates

Section 1. The House of Delegates shall meet annually at the time and place of the annual meeting of the Society, and shall so fix hours of meeting as not to conflict with the first general session of the Society, or with the session held for the address of the President, and so as to give delegates an opportunity to attend the other scientific proceedings and discussions so far as is consistent with their duties. The first session of the House of Delegates shall be held at 8 p. m. the day preceding the meeting of the Society, at which session as much as is possible of the business of the House shall be transacted.

Sec. 2. Each and every component Medical Society that has been chartered by this Society, and is free from indebtedness to this Society and is otherwise in good standing as a component Medical Society, shall be entitled to one delegate to the House of Delegates for the first twenty-five members or less, and an additional delegate for every additional twenty-five members or any additional major fraction of twenty-five members.

Sec. 3. A majority of the registered delegates shall constitute a quorum, and all of the sessions of the House of Delegates shall be open to Fellows of the Society.

Sec. 4. It shall, through its officers, Council, Executive Committee, and otherwise, give diligent attention to and foster the scientific work and spirit of the Society, and shall constantly study and strive to make each annual session a stepping-stone to future ones of higher interest.

Sec. 5. It shall consider and advise as to the material interests of the profession, and of the public in those important matters wherein it is dependent upon the profession, and shall use its influence to secure and enforce all proper medical and public health legislation, and to diffuse popular information in relation thereto.

Sec. 6. It shall make careful inquiry into the condition of the profession of each county in the State, and shall have authority to adopt such methods as may be deemed most efficient for building up and increasing the interest in such county societies as already exist, and for organizing the profession in counties where societies do not exist. It shall especially and systematically endeavor to promote friendly intercourse between physicians of the same locality, and shall continue these efforts until every physician in every county of the State who can be made reputable has been brought under medical society influences.

Sec. 7. It shall encourage post-graduate work in medical centers, as well as home study and research, and shall endeavor to have the results of the same utilized and intelligently discussed in the county societies, and in this Society.

Sec. 8. It shall elect representatives to the House of Delegates of the American Medical Association in accordance with the Constitution and By-Laws of that body, in such a manner that not more than one-half of the delegates shall be elected in any one year.

Sec. 9. It shall, upon application, provide and issue charters to county societies organized to conform to the letter and spirit of this Constitution and By-Laws.

Sec. 10. In sparsely settled sections, it shall have authority to organize the physicians of two or more counties into societies, to be designated by hyphenating the names of two or more counties, so as to distinguish them from district and other classes of societies, and these societies, when organized and chartered, shall be entitled to all the privileges and representation provided herein for county societies, until such counties may be organized separately.

Sec. 11. It shall have authority through its Council, by majority vote of the Council, a quorum being present, to elect any physician who applies directly to said Council for fellowship; but not unless he has been definitely refused admittance to a local society and the case has been appealed to the Council and only then after the Council has given his case a hearing and is convinced that he has been unjustly kept out of the local society and that it is impossible to reconcile the local society to admitting him and the Council shall certify such election to the Secretary. A member so elected shall on payment of annual assessments for current year be entitled to all the rights and privileges of Fellows of this Society.

Sec. 12. It shall have authority through or by its Council to discipline, suspend or expel any Fellow of this Society, provided the Council must first have called the offending Fellow and his offense to the attention of his county society, with the request that they expel him and the said county society has refused, neglected or failed so to do. And the Council shall have the same authority as to summoning witnesses, taking testimony, etc., in investigating conduct of Fellows as is provided in hearings on appeal.

Sec. 13. It may divide the counties of the State into ten councilor districts, and, when the best interest of the Society and profession will be promoted thereby, organize in each a district medical society; and members of the chartered county societies, and none others, shall be members in such district societies.

Sec. 14. It shall have authority to appoint committees for special purposes from among Fellows of the Society who are not members of the House of Delegates, and such committees may report to the House of Delegates in person, and may participate in the debate thereon.

Sec. 15. It shall present a summary of its proceedings to the last general meeting of each annual session, and the same shall be published in the Transactions.

CHAPTER V.—Election of Officers

Sec. 1. All elections shall be by secret ballot, and a majority of the votes cast shall be necessary to elect: Provided, that when only one name is to be balloted for, vote may be taken viva voce.

Sec. 2. The House of Delegates, at its first session, shall select a Committee on Nominations, consisting of ten delegates, no two of whom shall be from the same councilor district. It shall be the duty of this committee to consult with the Fellows of the Society, and to hold one or more sessions, at which the best interests of the Society and of the profession of the State shall be carefully considered. The committee shall report the result of its deliberations to the House of Delegates in the shape of a ticket containing the names of one member for the office of President, and one member for each of the other offices to be filled at the annual meeting.

Sec. 3. The report of the Nominating Committee and the election of officers shall take place at the session of the House of Delegates on the second day of the meeting.

Sec. 4. Nothing in this article shall be construed to prevent additional nominations being made by members of the House of Delegates.

Sec. 5. Any person known to have solicited votes for or sought any office within the gift of this Society shall be ineligible for any office for two years.

CHAPTER VI.—Duties of Officers

Section 1. The President shall preside at all meetings of the Society and of the House of Delegates; shall appoint all committees not otherwise provided for; shall deliver an annual address at such time as may be arranged; shall give a deciding vote in case of a tie, and shall perform such other duties as custom and parliamentary usage may require. He shall be the real head of the profession of the State during

his term of office, and, as far as practicable, shall visit by appointment the various sections of the State and assist the councilors in building up the county societies, and in making their work more practical and useful.

Sec. 2. The President-elect shall assist the President in the performance of his duties as may be requested by him and otherwise prepare himself for assuming the duties of President, to which he shall automatically succeed on the completion of the term of the President. He shall be a member of and chairman of the Council.

Sec. 3. The Secretary-Treasurer shall give bond for the trust reposed in him whenever the House of Delegates shall deem it requisite. He shall demand and receive all funds due the Society, together with the bequests and donations. He shall, under the direction of the House of Delegates, sell or lease any estate belonging to the Society, and execute the necessary papers; and shall, in general, subject to such direction, have the care and management of the fiscal affairs of the Society. He shall pay money out of the treasury only on a written order of the President, countersigned by the Secretary; he shall subject his accounts to such examination as the House of Delegates may order, and he shall annually render an account of his doings and of the state of the funds in his hands. He shall charge upon his books the assessments against each component county society at the end of the fiscal year; he shall collect and make proper credits for the same, and perform such other duties as may be assigned to him.

Sec. 4. The Secretary-Treasurer, acting with the Committee on Scientific Work, shall prepare and issue the programs for and attend all meetings of the Society, and of the House of Delegates, and of the Executive Committee and he shall keep minutes of their respective proceedings. He shall be custodian of all record books and papers belonging to the Society. He shall provide for the registration of the members and delegates at the annual sessions. He shall keep a card-index register of all the legal practitioners of the State by counties, noting on each his status in relation to his county society. In so far as it is in his power, he shall use the printed matter, correspondence and influence of his office to aid the councilors in the organization and improvement of the county societies, and in the extension of the power and usefulness of this Society. He shall conduct the official correspondence, notifying members of meetings, officers of their election, and committees of their appointment and duties. He shall act as chairman of the committees on Scientific Work and on Publication. He shall employ such assistants as may be ordered by the Council or the House of Delegates. He shall annually make a report of his doings to the House of Delegates.

In order that the Secretary-Treasurer may be enabled to give that amount of time to his duties which will permit of his becoming proficient, it is desirable that he should receive some compensation. The amount of his salary shall be fixed by the House of Delegates, on recommendation of the Finance Committee.

CHAPTER VII.—Councilor Districts

Section 1. To facilitate the more perfect organization of the medical profession, the State of North Carolina is hereby divided by counties into ten councilor districts, as follows:

First District.—Bertie, Chowan-Perquimans, Currituck, Gates, Hertford, and Pasquotank-Camden-Dare.

Second District.—Beaufort, Carteret, Craven, Hyde, Jones, Lenoir, Martin, Pamlico, Pitt, and Washington-Tyrrell.

Third District.—Bladen, Brunswick, Columbus, Duplin, New Hanover, Onslow, Pender, and Sampson.

Fourth District.—Edgecombe, Greene, Halifax, Johnston, Nash, Northampton, Wayne and Wilson.

Fifth District.—Chatham, Cumberland, Harnett, Hoke, Lee, Moore, Richmond, Robeson, and Scotland.

Sixth District.—Alamance-Caswell, Durham-Orange, Franklin, Granville, Person, Vance, Wake, and Warren.

Seventh District.—Anson, Cabarrus, Cleveland, Gaston, Lincoln, Mecklenburg, Montgomery, Rutherford, Stanly, and Union.

Eighth District.—Alleghany, Forsyth, Guilford, Randolph, Rockingham, Stokes, Surry, Wilkes, and Yadkin.

Ninth District.—Ashe, Avery, Burke, Caldwell, Catawba, Davidson, Davie, Iredell-Alexander, Mitchell, Rowan, Watauga.

Tenth District.—Buncombe, Cherokee, Haywood, Henderson, Jackson, McDowell, Macon-Clay, Madison, Polk, Swain-Graham, Transylvania, and Yancey.

CHAPTER VIII.—Council

Section 1. The Council shall be composed of the ten Councilors, and the President-elect who shall be President of the Council and shall hold daily sessions during the annual meeting of the Society, and at such other times as necessity may require, subject to the call of the Chairman or on petition of three Councilors. It shall meet on the last day of the annual meeting of the Society for the outlining of work for the ensuing year. At this session it shall elect a Secretary, and it shall keep a permanent record of its proceedings. It shall, through its President, make an annual report to the House of Delegates at such time as may be provided.

Sec. 2. Each Councilor shall be organizer, peace-maker, and censor for his district. He shall visit each county in his district at least once a year for the purpose of organizing component societies where none exists, for inquiring into the condition of the profession, and for improving and increasing the zeal of the county societies and their members. He shall make an annual report of his doings, and of the condition of the profession of each county in his district to the annual meeting of the House of Delegates and to the secretary at least quarterly and more often if he has knowledge of anything in any County Society in his District about which the President or Secretary ought to be informed. The necessary traveling expenses incurred by such Councilor in the line of the duties herein imposed may be allowed by the House of Delegates upon a proper itemized statement, but this shall not be construed to include his expense in attending the annual meeting of the Society.

Sec. 3. Collectively the Council shall be the Board of Censors of the Society. It shall consider all questions involving the rights and standing of Fellows, whether in relation to other Fellows, to the component societies, or to this Society. All questions of an ethical nature brought before the House of Delegates or the general session, shall be referred to the Council without discussion. It shall hear and decide all questions of discipline affecting the conduct of members or of a county society, upon which an appeal is taken from the decision of an individual councilor. Its decision in all such cases shall be final.

CHAPTER IX.—The Executive Committee

Sec. 1. The officers of this Society (See Article VIII, Section 1, Constitution), as follows: President, President-elect, Vice-Presidents, Secretary-Treasurer, and ten Councilors shall constitute the Executive Committee of which the President of this Society shall be President and the Secretary-Treasurer shall be Secretary.

Sec. 2. The executive committee shall meet upon the call of the President or upon the call of four other members.

Sec. 3. The executive committee through its President and Secretary, or through other members appointed by the President, shall have authority, and is hereby instructed to, act as liaison officer between this Society and any and all other organizations in this State, whether scientific, political, social or what not, to the end that such organizations may have the viewpoint of the Society, and such help and assistance, scientific, and otherwise as this Society might be able to render.

Sec. 4. The executive committee, ad interim, shall have the right to communicate the views of the Society and the profession on health, sanitation, legislation and on any other subject of apparent interest to the people or the profession and it shall have the right to speak for the Society in matters regarding the conduct of affairs of the Society and its relation to the public generally, provided that such subject has not previously been acted upon by the Society. All of which shall be subject to review by the House of Delegates in regular session.

Sec. 5. The executive committee shall make a full report of its doings to the annual meeting of the House of Delegates through its Secretary.

CHAPTER X.—Committees

Section 1. The standing committees shall be as follows:

A Committee on Scientific Work.
A Committee on Legislation.
A Committee on Publication.
A Committee on Nominations.
A Committee on Finance.
A Committee on Obituaries.
A Committee on Arrangements.

And such other committees as may be necessary. Such committees shall be elected by the House of Delegates, unless otherwise provided.

Sec. 2. The Committee on Scientific Work shall consist of three members, of which the Secretary shall be a member and chairman, and shall determine the character and scope of the scientific proceedings of the Society for each session, subject to the instructions of the House of Delegates or of the Society, or to the provisions of the Constitution and By-Laws. Thirty days previous to the annual meeting it shall prepare and issue a program announcing the order in which papers, discussions and other business shall be presented, which shall be adhered to by the Society as nearly as practicable.

Sec. 3. The Committee on Legislation shall consist of three members and the President and Secretary-Treasurer. Under the direction of the House of Delegates it shall represent the Society in securing and enforcing legislation in the interest of the public health and of the science of medicine. It shall keep in touch with professional and public opinion, shall endeavor to shape legislation so as to secure the best results for the whole people, and shall utilize every organized influence of the profession to promote the general interest in local, State and national affairs and elections. Its work shall be done with the dignity becoming a great profession, and with that wisdom which will make effective its power and influence. It shall have authority to be heard before the entire Society upon questions of great concern at such time as may be arranged during the annual meeting.

Sec. 4. The Committee on Publication shall consist of three members, of which the Secretary-Treasurer shall be one and chairman, and shall have referred to it all reports, and all scientific papers and discussions heard before the Society. It shall be empowered to curtail or abstract papers and discussions, and any paper referred to it which may not be suitable for publication in the Transactions may be returned to the author. The Committee shall have authority to arrange for the publication and distribution of the Transactions after receiving competitive bids, and shall use diligence in getting them into the hands of the members. All papers read before the Society shall be the property of the Society.

Sec. 5. The Committee on Nominations shall be appointed and perform its duties in accordance with the provisions of chapter 5, section 2, of these By-Laws. They shall also nominate a Committee on Scientific Work, a Committee on Legislation, a Committee on Publication, a Committee on Obituaries, a Committee on Finance, one member of the Committee on Arrangements, Delegates to the American

Medical Association, the Virginia Medical Society, the South Carolina Medical Association, and to such other bodies as the Society may determine. They shall also each third year nominate a Board of ten Councilors and a Secretary-Treasurer.

Sec. 6. The Committee on Finance, to consist of three members, shall examine the accounts of the Secretary-Treasurer and report to the Society, making suggestions as to the amount of assessments for the coming year, the remuneration of the Secretary-Treasurer, and such other suggestions concerning the finances of the Society as they may think proper. The Committee on Obituaries, to consist of three members, shall report to the general session of the Society the names of all members dying during the past year, with other data appropriate for memorial publication.

Sec. 7. The Committee on Arrangements shall consist of one member who shall be chairman, elected by the House of Delegates each year, and two or more members elected by the county society in the territory in which the annual meeting is to be held. It shall, by committees of its own selection, provide suitable accommodations for the meeting places of the Society and of the House of Delegates, and of their respective committees, and shall have general charge of all the arrangements. Its chairman shall report an outline of the arrangements to the Secretary-Treasurer for publication in the program, and shall make additional announcements during the meeting as occasion may require.

CHAPTER XI.—Of the Sections and Voluntary Communications

Section 1. The newly installed President shall, at the last session of each meeting, appoint a member to serve as chairman of each of the following sections, to-wit: Surgery; Practice of Medicine; Gynecology and Obstetrics; Pediatrics; Public Health and Education; Eye, Ear, Nose, and Throat: Provided, that the President, in making his appointments of chairmen of sections, shall give due consideration to the recommendations offered by the respective sections.

Sec. 2. The chairmen of sections shall send in to the Secretary-Treasurer, not later than thirty days previous to each meeting of the Society, the titles of papers to be presented by themselves and their assistants, to be used by the Committee on Scientific Work in making a program for the meeting.

Sec. 3. No paper shall be read before the Society unless the author be present, unless his absence be due to some unavoidable circumstance. A paper presented by proxy may be referred to the Committee on Publication.

Sec. 4. No paper shall be referred to the Committee on Publication until it has been placed in the hands of the Secretary-Treasurer; and the Secretary-Treasurer shall not return any paper accepted by the Society without the consent of the Society, and then he shall take a receipt for the same.

Sec. 5. No paper shall be received by or read before this Society that has been presented to any other society, excepting only a component society or District Society of this State or that has been offered for publication in any journal, and in the case of any paper accepted, the author is supposed to have invested with the Society all rights to its ownership.

Sec. 6. No paper shall be published in the Transactions of this Society unless approved by the Committee on Publication; and any paper rejected by said committee shall be returned to the author through the Secretary-Treasurer of the Society.

Sec. 7. It is to be understood that the Society is not to be considered as endorsing all the views and opinions advanced by the authors of papers published in the Transactions of the Society.

CHAPTER XII.—Assessments and Expenditures

Section 1. An assessment of five dollars per capita on the membership of the component societies is hereby made the annual dues of this Society, provided the

executive committee does not lower same for the next succeeding year on or before October 15th of the current year, which the executive committee shall have power and authority to do, which amount shall be collected by the secretary of each county society from each of its members on or before the first day of February and forwarded to the Secretary-Treasurer of the State Society before the first day of March in each year. The secretary of each county society shall forward a statement of its assessment, together with its roster of all officers and members, list of delegates, and list of non-affiliated physicians of the county, to the Secretary-Treasurer before the first day of March each year.

Sec. 2. Any county society which fails to pay its assessment, or make the reports required, on or before the date above stated, shall be held as suspended, and none of its members or delegates shall be permitted to participate in any of the business or proceedings of the State Society or of the House of Delegates, or receive the volume of Transactions, until such requirements have been met.

Sec. 3. All motions or resolutions appropriating money shall specify a definite amount, or so much thereof, as may be necessary for the purpose indicated, and must be approved by the House of Delegates, or by the executive committee.

CHAPTER XIII.—Rules of Conduct

The principles set forth in the Declaration of Principles of Medical Ethics of the American Medical Association shall govern the conduct of members in their relations to each other and to the public.

CHAPTER XIV.—Rules of Order

The deliberations of this Society shall be governed by parliamentary usage as contained in Roberts' Rules of Order, unless otherwise determined by a vote of its House of Delegates.

CHAPTER XV.—County Societies

Section 1. All county societies now in affiliation with the State Society, or those that may hereafter be organized in this State which have adopted principles of organization not in conflict with this Constitution and By-Laws, shall, upon application to the House of Delegates, receive a charter from and become a component part of this Society and shall be known as component medical societies.

Sec. 2. As rapidly as can be done after the adoption of this Constitution and By-Laws, a medical society shall be organized in every county in the State in which no component society exists, and charters shall be issued thereto.

Sec. 3. Charters shall be issued only upon approval of the House of Delegates, and shall be signed by the President and Secretary-Treasurer of this Society. The House of Delegates reserves to itself the authority to revoke the charter of any component county society whose actions are in conflict with the letter or spirit of this Constitution and By-Laws, but the same must be done by a specific resolution naming the Society whose charter it is desired to revoke and the cause therefor, and when said specific resolution is passed by a two-thirds majority roll call vote, it shall be the duty of the Secretary-Treasurer to call in the said charter. And the members of said society heretofore existing, shall cease to be members of a component county Medical Society and cease to be Fellows of this Society, until such time as another society may be organized in the county or the said county society reorganized, all of which must be done under the direction of and approved by this House of Delegates, before it shall be effective. However, the minority of said society, who voted to uphold the Constitution and By-Laws and dignity of this Society or the order of this Society through its Council, shall automatically continue as Fellows of this Society, so long as they keep themselves in good standing by payment of annual dues to the Secretary-Treasurer of this Society and otherwise, pending the organization of another Society in said county.

Sec. 4. Only one component medical society shall be chartered in any county. Where more than one county society exists, friendly overtures and concessions shall be made with the aid of the councilor for the district, if necessary, and all of the members brought into one organization. In case of failure to unite, an appeal may be made to the Council, which shall decide what action shall be taken.

Sec. 5. Each county society shall judge of the qualifications of its own members, but, as such societies are the portals to this Society and to the American Medical Association, every reputable and legally registered white physician who is practicing, or who will agree to practice, non-sectarian medicine, shall be entitled to membership. Before a charter is issued to any county society, full and ample notice and opportunity shall be given to every such physician in the county to become a member.

Sec. 6. Any physician who may feel aggrieved by the action of the society of his county in refusing him membership, or in suspending or expelling him, shall have the right of appeal to the councilor and from his decision either party may appeal to the council, whose decision shall be final, unless appeal is taken to the Judicial Council of the American Medical Association.

Sec. 7. In hearing appeals, the Council may admit oral or written evidence, as in its judgment will best and most fairly present the facts; but in case of every appeal, both as a board and as individual councilors in district and county work, efforts at conciliation and compromise shall precede all such hearings.

Sec. 8. When a member in good standing in a component society moves to another county in this State, his name, upon request, shall be transferred without cost to the roster of the county society into whose jurisdiction he moves.

Sec. 9. A physician living on or near a county line may hold his membership in that county most convenient for him to attend, on permission of the society in whose jurisdiction he resides.

Sec. 10. Each county society shall have general direction of the affairs of the profession in the county, and its influence shall be constantly exerted for bettering the scientific, moral, and material condition of every physician in the county; and systematic efforts shall be made by each member, and by the society as a whole, to increase the membership until it embraces every qualified physician in the county.

Sec. 11. Frequent meetings shall be encouraged, and the most attractive programs arranged that are possible. The younger members shall be especially encouraged to do post-graduate and original research work and to give the Society the first benefit of such labors. Official position and other preferments shall be unstintingly given to such members.

Sec. 12. The regular annual meeting of each County Society shall be held at the regular meeting in December of each and every year and if any Society shall hold more than one meeting in a month, then at the first meeting in December, at which time the officers for the ensuing year and a delegate or delegates and alternate or alternates to the House of Delegates of the Medical Society of the State of North Carolina shall be elected, reports of officers heard and such other business transacted as might properly come before an annual meeting. The number of delegates are provided for in Chapter IV, Section 2, By-Laws.

Sec. 13. The secretary of each and every component Medical Society, shall, within one week following the Annual Meeting, transmit to the Secretary-Treasurer, a roster of the officers and delegates, and if possible, a roster of members with a check covering annual dues for each, other than Honorary Fellows. In any event such last mentioned roster of members and check for annual dues for each shall be mailed to the Secretary-Treasurer on or before March 1st. Any society failing to make such report as specified above, shall with all its members automatically be suspended, and cannot be reinstated until all reports as mentioned above are in the hands of the Secretary-Treasurer of the Medical Society of the State of North Carolina. Any member or Fellow not being so reported with check for annual dues by March 1st, shall be and

is thereby suspended from Fellowship in the Medical Society of the State of North Carolina and can only be reinstated when all indebtedness to this Society has been paid. In making his annual report, the Secretary of the component society shall give for all new members, the college and date of graduation, date of license in this state and such other information as may be requested by the Secretary-Treasurer. For new members by transfer, he shall in addition give the name of county from which transfer was made and for transfer of members to other counties or state, the name of county or state to which transfer was made, also the names of all physicians in the county who are not members of local society, and names of such as may have died during the year just closing and such other facts as will show an accounting of every physician who has resided in the county during the year just closing. All of which must be in the hands of the Secretary-Treasurer on or before March 1st of current year.

CHAPTER XVI.—Order of Business

Section 1. The order of business shall be as arranged in official program, subject to change by a majority vote of the House of Delegates.

Sec. 2. The House of Delegates.

The President, or, in his absence, one of the Vice-Presidents, in the order of their rank, shall call the House to order, or, in the absence of all these officers, a presiding officer shall be chosen by a majority of the members present.

CHAPTER XVII.—Amendments

These By-Laws may be amended at any annual session by the majority vote of all the delegates present at that session, after the amendment has lain upon the table for one day.

The President appointed the following as an Advisory Committee to the Woman's Auxiliary: Drs. A. B. Holmes, James M. Northington, and Cyrus Thompson.

REPORTS OF COUNCILORS

FIRST DISTRICT

Dr. H. D. Walker, Councilor

The First District Medical Society has had four meetings during the year. The regular routine business has been carried on, and so far as I know everything is all right in this district.

SECOND DISTRICT

Dr. Grady G. Dixon, Councilor

Everything is going on smoothly in the second district. Our district society is equal to the State Society in scientific papers and far superior to it in the House of Delegates.

THIRD DISTRICT

Dr. John B. Cranmer, Councilor

This district comprises the counties of Pender, Onslow, Duplin, Sampson, Bladen, Columbus, Brunswick, and New Hanover.

From Chapter VIII, Section 2, Constitution and By-Laws of the Medical Society of the State of North Carolina, I respectfully quote the following:

"Each Councilor shall be organizer, peacemaker and censor for his district. He shall visit each county in his district at least once a year for the purpose of organizing component societies where none exists, for inquiring into the condition of the profession and for improving and increasing the zeal of the county societies and of their members. He shall make an annual report of his doings and of the condition of the profession of each county in his district to each annual session of the House of Delegates."

In the counties of the Third District in which there is not, as yet, a well organized society, functioning regularly, the profession, as a rule, go to the adjoining counties for their meetings. For instance, the men in Brunswick County frequently attend the regular monthly meetings of the New Hanover County Medical Society.

In so far as I know, pleasant relations prevail throughout the District. Every one is busy and interested in his profession and in his work. There seems to be no time for quibbling even if we had such inclination. Therefore I have not been called upon to act in the capacity of peacemaker or censor.

In the counties of Onslow, Sampson, Bladen, Columbus and New Hanover, I understand that the societies are active and interested as shown by regular meetings with well-balanced programs.

In the counties of Pender, Duplin and Brunswick, while they are not as definitely interested, they are functioning in some degree, as local units of a great State organization.

The Third District, generally, has had two meetings during the year, but in 1928 there was only one meeting. This meeting, which was well attended, was held in the Cape Fear Hotel in Wilmington. The president of the State Medical Society, Dr. Thurman D. Kitchin, was our honored guest, and his address upon this occasion was highly instructive, as well as very interesting to every one present. There was in addition, a scientific program, well arranged and very worth while. Along with the fellowship and good will, a course dinner was much enjoyed.

The Third District is gratified to report satisfactory and consistent progress along all lines.

FOURTH DISTRICT

Dr. W. H. Smith, Councilor

The Fourth Medical District is composed of Wayne, Johnston, Nash, Wilson, Edgecombe, Halifax and Northampton counties. Embracing these is the Fourth District Medical Society which meets every three months and which has usually an attendance of about fifty. This Society has been functioning for about eighteen years and the men of the District take a good deal of interest in it.

The component counties of the District have County Societies that are alive and which meet monthly. The exceptions to this are Halifax and Northampton which meet twice a year.

The work of the medical men along medical lines and organization is very satisfactory in the Fourth District.

One question I want to call to your attention is in whose District is Martin County and Greene County? At the beginning of the District Society work Martin County was in the Fourth District but of late years it has not been so considered. Just the opposite is the situation in regard to Greene County, of late years Greene County has been put in the Fourth District.

FIFTH DISTRICT

Dr. E. A. Livingston, Councilor

Since the last meeting of the North Carolina State Society the Fifth District has had two meetings, one at the Sanatorium and one at Southern Pines. At the Sanatorium meeting in October, 1928, the guests by invitation were Dr. Randolph, an associate of George Washington University, and Dr. Davison of Durham. Besides the papers of these eminent men there were interesting and instructive papers by local physicians of the District.

The following officers were elected for the coming year: President, Dr. A. H. McLeod, Aberdeen; Secretary, Dr. O. L. McFadyen, Fayetteville.

At the Southern Pines meeting April 4, 1929, Drs. H. A. Royster, Charles O'H. Laughinghouse, and F. R. Taylor of High Point were invited guests that read scientific papers. Local physicians of the District completed the program.

During this year this District Society lost by death Dr. James Wm. McNeil of Fayetteville, and Dr. Frank Garrett of Rockingham, men loved by all who knew them.

Nothing has come to me for adjustment. As far as I know peace and harmony prevail in the District.

SIXTH DISTRICT

Dr. V. M. Hicks, Councilor

Gentlemen:

The Sixth Medical District has completed a very satisfactory year in its organization. Most of the County Medical Units are meeting regularly and it is my observation that there is an increasing interest in these county meetings.

The controversy in the Wake County Medical Society seems to have been straightened out to the satisfaction of all concerned.

The two District meetings were most satisfactory. The summer meeting was held at Henderson at the Country Club and the fall meeting was held in Raleigh at the State Hospital. The scientific programs at both meetings were of a high order and after each meeting a dinner was served to the membership.

SEVENTH DISTRICT

Dr. T. C. Bost, Councilor

The annual meeting of the Seventh District Medical Society was held in Lincolnton October 8, 1928. This was a very interesting and instructive meeting. Ten papers were read and fully discussed. Over a hundred members were present. Dr. Thurman D. Kitchin, president North Carolina Medical Society, was present and made a very instructive talk.

A banquet was given to the Society by the Lincoln County Medical Society, which was greatly enjoyed and highly appreciated by the members.

Dr. J. R. Gamble, Lincolnton, was elected president, Dr. J. H. Tucker, Charlotte, vice-president, and Dr. Raymond Thompson, Charlotte, secretary. The next meeting will be held in Charlotte, October, 1929.

I have kept in touch with all of the County Medical Societies in the District and find that they are all organized and are holding regular meetings. Most of the counties have comparatively small membership except Mecklenburg and Gaston counties, but practically all of the doctors in the District belong to the county societies. Owing to the small membership in most of the counties, the Mecklenburg County Society, which has a large membership and meets twice a month, is now sending out their programs of each meeting to all the men in the District, thus affording members of small societies an opportunity to attend more scientific meetings than they otherwise might have.

The Montgomery County Medical Society which is in the Fifth District has applied for membership in the Seventh District, which District I represent. They state that they are located on the outer edge of their District and that they do not find it practical to attend their meetings. They also state that they could attend meetings better in the Seventh as they have more business and professional relations with the Seventh, and therefore wish to be transferred.

I am satisfied that this transfer should be effected and am prepared to bring this up before the House of Delegates this year at the Greensboro meeting.

A spirit of harmony and cooperation prevails among the men and much interest has been shown in the medical societies during the year throughout the District.

April 12, 1929.

To Whom it May Concern:

This is to certify that the Seventh District Medical Society at its annual meeting October 8, 1928, passed a resolution inviting Montgomery County to join the Seventh District Medical Society.

Raymond Thompson, Secretary.

This is to certify that Montgomery County Medical Society has passed a resolution expressing a desire to be transferred from the Fifth to the Seventh District.

This April 9, 1929.

C. Daligny,
Secretary Montgomery County Medical Society.

EIGHTH DISTRICT

The Eighth District Medical Society has gone along very smoothly, so far as I know. About the only thing I have to report is that at the last meeting it was decided to elect a secretary for three years. We have found that it is hard for one man to make plans for a successful meeting when he has only one meeting to practice on. The president and secretary were formerly elected for six months. It was decided to elect the secretary for three years, and he will be elected at the meeting which is to take place the latter part of this month in Mount Airy.

NINTH DISTRICT

Dr. M. R. Adams, Councilor

The Ninth District Medical Society has the largest and most enthusiastic attendance of any district society in the State.

The officers and members of our society are endeavoring to carry out the wishes and purposes of the State Medical Society by stimulating an interest among medical men in the district and encouraging them to attend our meetings which is not only an educational feature but also raises the standard of medicine in many ways.

The doctors of North Carolina appreciate more each year the importance of loyally and cordially supporting the State Medical Society. We are proud of our State Society and we pledge you our loyal support.

Our past president, Dr. C. Banks McNairy of Lenoir, died last year. The society is saddened by the loss of one of its strongest and most beloved men. He was blest with a rare combination of the finest qualities which everyone admired and respected. As a medical man he was without a peer. He was a man of wonderful ability. As a physician, executive, orator, humanitarian, lover of children, he was an ideal. Indeed the medical profession of North Carolina has lost one of its greatest men. His loyalty and faithfulness to his country, to his friends and to his profession was an inspiration to all. A man among men. He stood out like the sturdy oak in the forest.

In memory of Dr. McNairy our society has started a flower garden at the Barium Springs Orphanage near Statesville. A living tribute to his memory. We felt that nothing could be more fitting than this living tribute to a great man.

The most important event of the entire year was the annual meeting which was held in Statesville on the 27th of September last. The officers

of the society, by patient, concerted endeavor, worked out a good program and a number of scientific papers were read—all of a high order, up-to-date, and progressive. The consensus of opinion was that it was one of the best meetings in the history of the society, there being approximately 300 present—in fact the interest in the annual meetings is increasing every year.

The members of our society are taking a more active interest than ever before. For sometime this society has chosen to dispense with the discussion of papers in order that more essays could be heard, but it was decided to go back to the more usual plan of providing for discussions and limiting the program to approximately six papers. It was a great privilege to have a number of honor guests who were invited. Among them were Dr. Thurman D. Kitchin, President of the State Medical Society; Dr. Charles O'H. Laughinghouse, of State Board of Health; Dr. W. C. Davison, Dean, Duke University; Dr. J. H. Hall, Richmond; Dr. Cyrus Thompson, of Jacksonville, N. C.; Dr. Louis H. Clerf and Dr. Douglas P. Murphy, of Philadelphia; and Maj. James M. Troutt, of the Medical Corps, U. S. Army.

After the meeting the Iredell County Medical Society gave a banquet which was a highly enjoyable occasion.

Looking towards the future the Ninth District Medical Society is hoping that each year will show an increase in interest and attendance.

The officers elected for 1929: President, Dr. Roy C. Tatum, Statesville; Vice-President, Dr. Glenn Frye, Hickory; Secretary-Treasurer, Dr. James W. Davis, Statesville.

We are looking forward to the meeting in Hickory this year and we are assured of a cordial welcome from the Catawba County Medical Society and the city of Hickory.

TENTH DISTRICT

Dr. J. F. Abel, Councilor

I have visited seven of the thirteen counties of my district and been in touch with some of the others during the past year. There are a few active societies in my district and some exist only in name. Many of the counties have so few doctors it is hard to get them to feel that they can have a practical society. A great many doctors in every district have outside interests which takes all their slack time and too frequently time from the busy part of this work. Some have radios and when a society meeting interferes with a good program they can conveniently have a special call that keeps them from the meeting. The Tri-County organization has not produced any more interest. We have hopes that the building of county hospitals in the district will stir the doctors to greater interests in their profession and its organization. My county (Haywood) opened its hospital January 1, 1928. The first year it admitted about 700 patients and 156 abdominal operations were done by three doctors. It made a

net profit of a few thousand dollars, and has made a better showing the first quarter of this year. During the past year a community hospital was opened at Marion, bonds voted and ready for sale at Burnsville, bond election lost in Madison County, bond election being called in Jackson County with almost absolute assurance that it will carry. A strong sentiment in another county for a community hospital which I am sure will call an election in the near future. This hospital movement in this district is being encouraged and assisted by the Duke Foundation.

The Tenth District held its usual two meetings the past year. The fall meeting was held at Burnsville where among our distinguished guests were President Kitchin and Dr. O. L. Miller of Charlotte. A recent meeting was held at Asheville April 10th where after a pretty new and very interesting address by the State Health Officer, Dr. Laughinghouse, a very entertaining and instructive program was had. Part of which, No. 5 on the list, was "Pediatrics from the Tenth District Viewpoint," excited a very lively discussion, and the Society was amazed that North Carolina was only behind three states, Maine, Maryland, and Oregon, in infant mortality, and the tenth district led in the State and Buncombe County led in the district. A very astouding thing that Buncombe County, having the finest climate in the world (an international health resort), the city of Asheville with a whole-time efficient health officer, a whole-time efficient active school physician, a whole-time efficient county health officer who has the cooperation of three efficient whole-time nurses, a medical profession that is outstanding, specialists, pediatricians, and obstetricians who are very capable—and yet she has the highest infant mortality of any point in the United States.

As Councilor of the district I feel safe in saying that the district will heartily cooperate with the State Board of Health in making necessary survey of the State and especially the Tenth District to determine the cause of this unusual occurrence and apply the necessary remedy.

REPORT OF BOARD OF COUNCILORS

Dr. R. B. Davis, Secretary of the Council, made the following report:

The Council met at seven-thirty p. m., April 15, 1929, in room 210, O. Henry Hotel, and was called to order by the Chairman, Dr. G. G. Dixon. The following members were present: Drs. Walker, Livingston, Hicks, Davis, Adams, and Abel.

Dr. J. A. Tinsley (colored), president of the North State Medical Society, with eleven other colored doctors, appeared before the Council requesting that some method be worked out whereby the colored doctors might have closer contact with the white medical society. After the delegation left the matter was carefully considered by the Council, and the following recommendations are now submitted to the House of Delegates for its approval:

The Council recommends that the Medical Society of the State of North Carolina instruct its Secretary-Treasurer to mail to any colored

doctor in the state who requests it a copy of the Transactions of its meetings, provided that such doctor pay for the cost of the printing of the same.

The Council further recommends that the officers of the Medical Society of the State of North Carolina assist the North State Medical Society in obtaining white physicians to read papers and hold clinics for them during the meetings of the North State Medical Society.

On motion of Dr. John B. Wright the report of the Council was accepted.

NOMINATING COMMITTEE

The following were selected to serve as members of the Nominating Committee:

First District	C. B. Williams
Second District	J. M. Parrott
Third District	J. D. Robinson
Fourth District	J. M. Baker
Fifth District	W. D. James
Sixth District	John B. Wright
Seventh District	Jas. M. Northington
Eighth District	Jos. L. Spruill
Ninth District	M. R. Adams
Tenth District	C. V. Reynolds

The House of Delegates then adjourned.

MINUTES OF THE SECOND SESSION OF HOUSE OF DELEGATES

WEDNESDAY, APRIL 17, 1929, 4:00 P. M.

Dr. M. L. Stevens of Asheville presented the report of the Delegates to the American Medical Association, which was approved.

REPORT OF DELEGATE TO AMERICAN MEDICAL ASSOCIATION

As a delegate from this Society to the American Medical Association I have been impressed with the great responsibility resting upon the House of Delegates of that body and upon its individual members. As you know, the American Medical Association now has enrolled over 96,000 members. The direction and supervision of the affairs of this great association are vested in the House of Delegates, constituted of but 175 members, three of whom are from this Society. Its deliberations and enactments determine the principles and policies of the medical profession of the nation, and influence legislators, educators, the leaders in various professional and trade activities, and even the social and home environments of the people of our land.

At the meeting in Minneapolis last year the usual number of problems relative to the welfare of our profession and the public were considered but which cannot be included in the brief report of your delegate. Only three of them will be brought to your attention.

The Judicial Council again reported their conviction that changes should be effected in the by-laws of constituent state associations and of the A. M. A. whereby these organizations would have some jurisdiction over their own membership. Their report on this subject was identical with that first presented to the House of Delegates three years ago in Dallas and two years ago in Washington, and reported to this Society by your delegates last year. This is of special interest to us at this time because at the last meeting of our Society a Committee was appointed to revise the Constitution and By-Laws, and the report of this committee has already been presented at this meeting.

In accordance with the recommendations of the Judicial Council the By-Laws of the A. M. A. were so amended as to give to the House of Delegates power to discipline or expel a member of the A. M. A. or a Fellow of the Scientific Assembly on the recommendation of the Judicial Council.

A resolution presented by the Committee on Medical Education, and which was adopted, is also of interest to us. The substance of that resolution is as follows:

1. That is would be most desirable that medical students should graduate and enter practice at an earlier age than at present.

2. That the plan covering the medical course in three years of four quarters each, which is illustrated in the plan proposed at Duke University, instead of four years of three quarters with an interval of long vacation, and any other adequate plan of reducing the length of the medical course are greatly to be desired.

Respectfully submitted,

M. L. Stevens.

Resolution on expert testimony was presented by Dr. Stevens, Dr. Reynolds and Dr. McBrayer, and was approved. Resolution follows:

RESOLUTION EN RE EXPERT TESTIMONY

WHEREAS the American Medical Association has been in touch, through its Bureau of Legal Medicine and Legislation, with the American Bar Association, with respect to the prevention, or at least the limitation of the evils that are now incident to expert testimony, and

WHEREAS a draft of a proposed law has been prepared by the Bureau of Legal Medicine and Legislation and submitted to a committee of the American Bar Association, copies of which draft will be furnished to state associations seeking advice with respect to legislation to regulate expert testimony, therefore be it

RESOLVED that our Committee on Legislation be requested to study this problem and report at our next annual meeting their opinion as to the advisability of our Society sponsoring legislation to regulate expert testimony in North Carolina.

M. L. Stevens,
C. V. Reynolds,
L. B. McBrayer.

Dr. C. V. Reynolds of Asheville presented report of the Committee on Finance, which was approved, as follows:

Your Committee on Finance beg leave to report that they have examined the Secretary-Treasurer's financial statement of receipts and disbursements from April 28, 1928, to April 13, 1929, and find it to be in form and correct.

C. V. Reynolds,
J. W. Dickie,
N. B. Adams.

Dr. John W. MacConnell of Davidson presented report of the State Board of Medical Examiners, which was approved. Report follows:

REPORT OF THE BOARD OF MEDICAL EXAMINERS FOR THE YEAR 1928

The work of the Board has gone smoothly for the past year without any dissensions or matters of legal action. The Board held regular meetings in June and December. Sixty-nine men were licensed by examination and 32 by endorsement of credentials. By refusing to admit to examination any except graduates of Class "A" medical colleges who have had good preliminary education, the percentage of failures remains low, only four men failing by examination. This is in marked contrast with conditions of some years ago when a large number of incompetent men took the examinations, only to fail on the same with embarrassment to themselves and extra trouble for the Board. The Board applies the same rules to men applying for endorsement of their credentials, and only about one in every four applicants is ever allowed to come before the Board, being rejected under the Board rulings which apply to all candidates. The Board is trying to fulfill its sworn duty to the public of North Carolina and to the medical profession of the State, and we feel that the men we have licensed are competent and if the same standards continue in force for a generation we will have in North Carolina a group of physicians of the highest standards.

The President and Secretary of the Board attended the meeting of State Board officials and the Congress on Medical Education at Chicago, and tried to give North Carolina proper representation.

Some bills were introduced in the Assembly at Raleigh which would have been injurious to our Medical Practice Act if adopted, but none

passed, due to the watchfulness of the Legislative Committee and the cooperation of the leaders of both parties.

The next meeting of the Board will be held in Raleigh on June 24, 1929.

John W. MacConnell, M.D.,
Secretary.

THE FOLLOWING WERE LICENSED BY ENROSEMENT OF CREDENTIALS

Name	*Address*	*Medical College*	*Yr.*	*State*
Biggart, James Filmen	Mullins, W. Va.	Tulane	1921	W. Va.
Boice, James Montgomery	Burgettstown, Pa.	Jefferson	1906	Penn.
Boulware, John Hugh	Winnsboro, S. C.	Med. Col. S. C.	1924	S. C.
Broome, Lemuel Redmond	Catawba Sana., Va.	Univ. of Va.	1925	Va.
Brownsberger, John Failor	Los Angeles, Calif.	Col. Med. Evang.	1925	Calif.
Feagans, Robert Edward	University, Va.	Univ. of Va.	1925	Va.
Lomax-Fisher, Ora Mabel	Washington, D. C.	Howard Univ.	1924	Va.
Fultz, William Edmond	Asheville, N. C.	Dalhoosie Univ.	1925	Nova Scotia
Hill, William Gibson Clark	Cameron, W. Va.	P. & S. Col., Balt.	1909	W. Va.
Lassiter, Vernon Clark	Winston-Salem, N. C.	Emory Univ.	1924	Ga.
McKay, Robert Witherspoon	Baltimore, Md.	Johns Hopkins	1923	Md.
Raymer, John George	Beaver, Penn.	Harvard	1925	Nat. Board
Roberts, William McKinley	Mittineague, Mass.	Tufts	1925	Mass.
Warfield, Mary Cabell	Spartanburg, S. C.	Wom. Med. Col.	1922	S. C.
Warlick, Henry Clinton	Charlotte, N. C.	Univ. of Md.	1918	W. Va.
Woody, William Harvey	Bakersville, N. C.	U. of Louisville	1924	Ky.
Suggett, Orril Legrand	Asheville, N. C.	Barnes Med. Col.	1893	Mo.
Martin, Cecil Edward	N. Emporia, Va.	Med. Col. Va.	1909	Va.
Wilson, Jesse O'Neal	Spartanburg, S. C.	Med. Col. S. C.	1912	S. C.
Beers, David Lynn	Asheville, N. C.	Univ. of Mich.	1925	Mich.
Blumberg, Alfred	Oteen, N. C.	Univ. of Colo.	1923	Utah
Burton, William Preston	Boissevain, Va.	Jefferson	1923	W. Va.
Edwards, Edward Clay	Monroe, La.	Vanderbilt	1924	La.
Gibson, William Thornwell	Batesburg, S. C.	U. of Md.	1909	S. C.
Goad, Robert Roosevelt	Iowa City, Iowa	Med. Col. Va.	1925	Va.
Houck, Thaddeus Hawkins	Timmonsville, S. C.	Med. Col. S. C.	1912	S. C.
Page, Wilbert Clarence	Sarasota, Fla.	Queens Univ.	1916	Fla.
Lyon-Thomas, Lelia May (F)	Bristol, Tenn.	Meharry	1923	Tenn.
Tygett, Glenn Joseph	Statesville, N. C.	Univ. of Ill.	1924	Ill.
Wilson, Leonard Livingston	Mt. Olive, N. C.	Tulane	1924	U. S. Naval Med. Corps
Wingfield, Perino Boone	Logan, W. Va.	Ga. Med. Col.	1924	Ga.
Andes, George Calvert	Milburn, W. Va.	Med. Col. Va.	1917	Va.

THE FOLLOWING WERE LICENSED BY EXAMINATION:

Name	*Address*	*Medical College*	*Year*
Adcock, David Filmore	Oxford, N. C.	Med. Col. Va.	1928
Arnold, Emerson Victor	Durham, N. C.	Ohio State Univ.	1928
Avery, Edward Stanley	Morganton, N. C.	Univ. of Penn.	1928
Berryhill, Walter Reece	Charlotte, N. C.	Harvard Med.	1927
Best, Lynwood Kent	Columbia, S. C.	Med. Col. S. C.	1928
Bowen, Harold Jenkins	Charleston, S. C.	Med. Col. S. C.	1927
Bradford, Williamson Zeigler	Charlotte, N. C.	Univ. of Penn.	1928
Brown, Earl Henderson, Jr.	Dillon, S. C.	U. of N. C. and U. of Penn.	1927
Cason, Hugh Bunyau	Jewell, Ga.	Emory Med. School	1928
Chadwick, William Stewart	Gloucester, N. C.	Med. Col. Va.	1928
Chiles, George Glasgow	Durham, N. C.	Med. Col. Va.	1926
Clary, William Thomas	Greensboro, N. C.	U. of N. C. and U. of Penn.	1928
Corbett, James Patrick	Whitakers, N. C.	U. of N. C. and Wash. U.	1928
Corpening, Flave Hart	Brevard, N. C.	U. of N. C. and Jefferson	1928
DeLoatch, Mahlon Wingate	Severn, N. C.	Med. Col. Va.	1928
Earp, Raymond Elmore	Selma, N. C.	Univ. of Penn.	1928
Epstein, Joseph Niles	Rocky Mount, N. C.	U. of N. C. & Rush Med. C.	1928
Fetter, Edgar Minton	Greensboro, N. C.	U. of N. C. and Jefferson	1928
Gooding, Guy Vernon	Kinston, N. C.	Tulane	1928
Grigg, John Richard	Gastonia, N. C.	U. of Louisville	1928
Greene, Robert Hadley (C)	Washington, N. C.	Howard Univ.	1927
Grimes, Lorenzo Gladstone (C)	Atlanta, Ga.	Meharry	1927
Hartsfield, Robert Bronson	Wilmington, N. C.	Wake For. and Syracuse U.	1928
Hawfield, Clayton	Washington, D. C.	U. of N. C. and Geo. Wash.	1928
Helms, Jefferson Bivins	Monroe, N. C.	Wake For. and U. of Penn.	1928
Hill, Millard Daniel	Smithfield, N. C.	Med. Col. Va.	1928
Hollowell, Claude Velmont	Corapeake, N. C.	Wake For. & Med. Col. Va.	1928
Houser, Forest Melville	Cherryville, N. C.	Univ. of Penn.	1928
Hunter, William Cooper	Enfield, N. C.	Univ. of Penn.	1928
Jones, Jefferson Albright	Morganton, N. C.	U. of N. C. & U. of Penn.	1928
Jones, Paul Lincoln (C)	Brockton, Mass.	Tufts Med. Col.	1927
Kesler, Robert Cicero	Spencer, N. C.	Tulane	1928
Lackey, Walter Jackson	Fallston, N. C.	Univ. of Va.	1928

Name	*Address*	*Medical College*	*Year*
Leonard, Jacob Calvin, Jr.	Lexington, N. C.	Jefferson	1928
Linney, Romulus Zachariah	Taylorsville, N. C.	U. of N. C. & U. of Penn.	1928
Long, Zachary Fillmore	Rockingham, N. C.	Univ. of Penn.	1928
Lovell, Martin Hutson (C)	Cambridge, Mass.	Meharry	1927
McIntyre, Stephen	Lumberton, N. C.	Jefferson	1928
Mackie, George Carlyle	Yadkinville, N. C.	Wake For. & U. of Penn.	1928
Mackie, Nathan Walser	Boonville, N. C.	U. of N. C. & Wash. U.	1928
Maness, Archibald Kelly	Biscoe, N. C.	U. of N. C. & Jefferson	1928
Martin, William Coda	Liberty, N. C.	Tulane	1928
Martin, William Joseph, Jr.	Davidson, N. C.	U. of N. C. & U. of Penn.	1928
Moore, James Carlisle, Jr.	McColl, S. C.	Med. Col. S. C.	1928
Moss, George Oren	Cliffside, N. C.	Emory Univ	1927
Myers, Dwight Loftin	Statesville, N. C.	Tulane	1925
Newland, Charles Logan	Brevard, N. C.	Med. Col. Va.	1927
Norton, John William Roy	Laurinburg, N. C.	Vanderbilt	1928
O'Dell, James Walter	Fayetteville, N. C.	Univ. of Ga.	1926
Ogburn, Lundie Calvin	Raleigh, N. C.	Jefferson	1928
Perry, Nelson L. (C)	Raleigh, N. C.	Howard Univ.	1928
Primakoff, Harry William	Durham, N. C.	U. of N. C. & Geo. Wash.	1928
Pulliam, Benjamin Eloth	Winston-Salem, N. C.	Jefferson	1928
Richardson, William Perry	Winston-Salem, N. C.	Med. Col. Va.	1928
Rodman, Robert Boyd	Wilmington, N. C.	Med. Col. of S. C.	1928
Rose, James William	Goldsboro, N. C.	Tulane	1928
Shelburne, Palmer Augustine	Richmond, Va.	Med. Col. Va.	1927
Sink, Virgil Rex	Winston-Salem, N. C.	U. of N. C. & U. of Penn.	1928
Small, Milton Bernard	Siler City, N. C.	Wake Forest and Tulane	1928
Spiggle, Charles Harold	Durham, N. C.	Med. Col. of Va.	1928
Stone, George Gerald	Fayetteville, N. C.	Univ. of Va.	1926
Temple, Levi Wade	Lake View, S. C.	U. of N. C. & U. of Md.	1928
Timberlake, Baxter Hall	Wake Forest, N. C.	Jefferson	1928
Tyndall, Robert Glenn	Kinston, N. C.	Wake Forest & U. of Penn.	1928
Tyson, John Joyner	Ayden, N. C.	Wake For. & Med. Col. Va.	1928
Watson, Paul Southerne	Tuscaloosa, Ala.	Univ. of Penn.	1928
Veal, James Ross	Oakboro, N. C.	Med. Col. S. C.	1928
Wood, George Thomas, Jr.	High Point, N. C.	U. of N. C. & Jefferson	1928
Wright, George Washington, Jr.	Raleigh, N. C.	Univ. of Ga.	1926

We have licensed a total of 101 in 1928.

Report of the Committee on Award of Moore County Medical Society Medal was called and Dr. J. M. Parrott and Dr. John Q. Myers of the committee reported that they had expected Dr. W. C. Mudgett, Chairman of the Committee to be present but he had not arrived and they were not ready to make a report and requested that the committee be authorized to make a report and deliver the medal and that the report of the Committee and the winning paper be published in *Southern Medicine and Surgery*. Report approved and request concurred in.

The Committee on President's Message and the President's Address made the following report, both of which were approved:

REPORT OF COMMITTEE ON PRESIDENT'S MESSAGE

We, your special Committee, appointed to consider the recommendation contained in the message of the President to the House of Delegates, beg leave to report as follows:

We heartily endorse the recommendation contained in the last paragraph that State, County and Municipal Boards of Health be apprised of the attitude of the Medical Society in suitable resolution wherein is set forth that it is the sense of this body that the domain of public health procedure shall be limited to preventive medicine and that the curative field of medicine be left to the medical profession, excepting those functions assumed as a policy by the State or any unit thereof in the treatment of the insane, feeble-minded, tuberculous, and orthopedic diseases of the inmates in the public institutions.

In connection with this recommendation the answers to the questions propounded by the President in the first part of his message were thoughtfully considered by your committee and it would appear that in reply to the question, "Do we need definite expression whereby the profession in a given community will be enabled to say to the Board of Health 'thus far shalt thou go and no further'?" The answer is—"Yes."

The reply to Question Two, "Shall it be agreed that whatever the profession can do better than the State that the profession should do?" The answer is—"Yes, even to the point of assuming the responsibility for preventive medicine, provided the profession as a whole undertakes the responsibility."

The answer to Question Three, "Shall it be agreed that whatever the State or a group of private citizens in connection with the State can do better than the profession is doing, that the State should do, even though it infringes on the preserves of curative medicine?" In answer to this question your Committee is not prepared nor is it willing to acknowledge that the State or any group of laymen is able to do curative medicine better than the trained physicians, nor is your committee willing to recommend the enlargement of the activities of Public Health procedure to include any part of curative medicine.

We recommend the appointment of a committee to draft resolution to conform with the recommendation in the President's Message for presentation to the various Health Boards of the State.

(Signed)

K. P. B. Bonner,
G. H. Macon,
A. B. Holmes.

Greensboro, N. C., April 16, 1929.

In accordance with recommendation of the Committee calling for an additional committee in the last paragraph the Committee on Public Policy and Legislation was appointed to handle this matter.

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS

We, your Committee, appointed to consider and report upon the annual address of the President, beg leave to report that we have gone into a very careful consideration of it and are impressed with the scholarly presentation and the deep thought contained therein. It contains much food for thought and reflection and does honor to the President and the Society.

We congratulate Dr. Kitchin upon such an able address and extend the thanks and appreciation of the membership of the State Medical Society.

(Signed)

K. P. B. Bonner,
G. H. Macon,
A. B. Holmes.

Greensboro, N. C., April 16, 1929.

REPORT OF COUNCIL

5:00 P. M., April 16, 1929.
O'Henry Hotel, Room 220.

The Council was called to order by Dr. G. G. Dixon, Chairman, with the following members present: Drs. Smith, Bost, Abel, Adams, Walker, and Davis.

Mr. R. M. Grumman of the University Extension Course appeared before the council requesting the approval of proceeding with the program of education in the State by obtaining an expert on lung pathology and giving one week classes to the ten centers that have agreed to pay for the actual cost of the course which is two hundred dollars. The council approved of the work being done.

THIRD MEETING OF THE COUNCIL

April 17, 1929.
O'Henry Hotel Dining Room, 3:30 P. M.

Meeting called to order by Dr. G. G. Dixon, Chairman. Members of the Board present: Drs. Bost, Hicks, Abel, Davis, and Livingston by proxy only. Officers for the coming year were elected as follows: Dr. J. F. Abel, chairman, and Dr. R. B. Davis, secretary.

There being no further business to come before the board it adjourned.

The report of the Nominating Committee was presented by the Secretary of the Committee, Dr. J. M. Northington of Charlotte, and was unanimously adopted. Report follows:

REPORT OF NOMINATING COMMITTEE

To the House of Delegates of the Medical Society of the State of North Carolina:

The Nominating Committee held two sessions, and, after giving careful consideration to the interests of the Society and consulting with many members of the Society, we beg to submit the following report:

We nominate for the officers of this Society for the ensuing year:

President—Dr. L. A. Crowell ..... Lincolnton
First Vice-President—Dr. W. B. Murphy ..... Snow Hill
Second Vice-President—Dr. Wm. E. Warren ..... Williamston
Third Vice-President—Dr. N. B. Adams ..... Murphy

DELEGATES TO AMERICAN MEDICAL ASSOCIATION, 1930-1931

Dr. H. A. Royster ..... Raleigh
Alternate: Dr. Joseph B. Greene ..... Asheville
Dr. A. J. Crowell ..... Charlotte
Alternate: Dr. L. W. Kornegay ..... Rocky Mount

DELEGATES TO MEDICAL SOCIETY OF VIRGINIA

Dr. B. C. Willis ..... Rocky Mount
Dr. W. W. Green ..... Tarboro

Dr. L. J. Smith ..... Wilson
Dr. W. F. Cole ..... Greensboro
Dr. J. M. Williams ..... Warsaw
Dr. Frank Sabiston ..... Kinston
Dr. L. B. Evans ..... Windsor
Dr. W. W. Sawyer ..... Elizabeth City

DELEGATES TO SOUTH CAROLINA MEDICAL ASSOCIATION

Dr. J. L. Adams ..... Asheville
Dr. O. L. MacFadyen ..... Fayetteville
Dr. T. M. Watson ..... Wilmington
Dr. R. S. Beam ..... Lumberton
Dr. J. W. Davis ..... Statesville

DELEGATES TO GEORGIA STATE MEDICAL ASSOCIATION

Dr. W. G. Suiter ..... Weldon
Dr. E. A. Livingston ..... Gibson
Dr. F. L. Knight ..... Sanford

COMMITTEE ON PRINTING AND SUPPLIES

Dr. L. B. McBrayer ..... Southern Pines
Dr. P. P. McCain ..... Sanatorium
Dr. J. W. Dickie ..... Southern Pines

COMMITTEE ON OBITUARIES

Dr. C. M. Van Poole ..... Salisbury
Dr. C. A. Julian ..... Greensboro
Dr. A. A. Kent ..... Lenoir

COMMITTEE ON PUBLIC POLICY AND LEGISLATION

Dr. B. J. Lawrence, *Chairman* ..... Raleigh
Dr. K. P. B. Bonner ..... Morehead City
Dr. J. T. Burrus ..... High Point

MEMBER OF COMMITTEE ON MEDICAL SOCIETY FOUNDATION

(Succeeding Dr. E. J. Wood), for six year term:

Dr. J. B. Sidbury ..... Wilmington
Place of Meeting ..... Pinehurst
Time of Meeting .....To be determined by the President and the Secretary

CHAIRMAN OF COMMITTEE ON ARRANGEMENTS

Dr. W. C. Mudgett ..... Southern Pines

Signed by the Nominating Committee:

J. M. Parrott, Chairman,
J. M. Northington, Secretary,
C. B. Williams,
J. R. Robinson,
J. M. Baker,
W. D. James,
John B. Wright,
Jos. L. Spruill,
M. R. Adams,
C. V. Reynolds.

No further business appearing on motion adjourned.

PROGRAM

GENERAL SESSIONS

FIRST GENERAL SESSION

TUESDAY, APRIL 16, 9:30 A. M.

Opening Exercises (Ball room O'Henry Hotel), Dr. Charles A. Julian, Chairman Committee on Arrangements, Greensboro, presiding.

Invocation: Dr. Chas. F. Myers, Greensboro.

Address of Welcome: Hon. E. B. Jeffries, Mayor of Greensboro.

Address of Welcome: Dr. J. L. Spruill, President Guilford County Medical Society, Jamestown, for Guilford County Medical Society.

Greetings from Woman's Auxiliary of the American Medical Association, Mrs. Allen H. Bunce, President, Atlanta, Ga.

Response to Addresses of Welcome: Dr. O. L. McFadyen, Fayetteville.

The President's Address: Dr. Thurman D. Kitchin, Wake Forest.

Announcements.

The Bivouac of Our Dead: Dr. C. M. Van Poole, Chairman, Committee on Necrology.

Dr. C. M. Van Poole has answered present at fifty consecutive meetings. Remarks by Dr. Cyrus Thompson.

Address, (Invited Guest): "Diagnostic Medical Clinic," (lantern slides), Dr. Allen H. Bunce, F.A.C.P., Vice Speaker of the House of Delegates, American Medical Association, Atlanta.

Address, from Practice of Medicine: "A New Era in Chest Study," (lantern slides), Dr. G. C. Cooke, Winston-Salem.

Address, from Section on Public Health: "Venereal Disease, Our Greatest Health Problem," Dr. W. A. McPhaul, Charlotte.

Address, from Section on Eye, Ear, Nose and Throat: "Optic Neuritis, Due to Salvarsan," Dr. C. W. Banner, Greensboro.

1:00 P. M.—Luncheon, Jefferson Medical College Alumni.

SECOND GENERAL SESSION

8:00 p. m.—Tuesday evening, April 16th. (County Court House, Room No. 1.)

Report of Obituary Committee: Dr. C. M. Van Poole, Chairman.

THIRD GENERAL SESSION

9:00 A. M. TO 12 M., WEDNESDAY, APRIL 17

(Ball Room, O. Henry Hotel)

Address, (Invited Guest): "Angina Pectoris," Dr. Ross G. Patterson, Dean Jefferson Medical College, Philadelphia.

Address, from Section on Chemistry, Materia Medica and Therapeutics: "Treatment of Uremia," Dr. A. B. Holmes, Fairmont, N. C.

Discussion by Dr. E. S. Bullock, Wilmington, N. C.

Address, from Section on Surgery: "The Diagnosis and Treatment of Acute Intestinal Obstruction Invollving the Small Intestine," Dr. B. C. Willis, Rocky Mount.

Address, from Section on Gynecology and Obstetrics: "Surgery of the Female Pelvis from an Anatomical Standpoint," (illustrated), by Dr. Ivan Proctor, Raleigh.

Discussion by Dr. Charles S. Mangum, Chapel Hill, and Dr. Oren Moore, Charlotte, N. C.

Address, from Section on Pediatrics: "The New-born," Dr. J. LaB. Ward, Asheville, N. C.

FOURTH GENERAL SESSION

8:00 P. M. WEDNESDAY, APRIL 17

(Ball Room O. Henry Hotel)

Report from the House of Delegates.

Unfinished Business.

Report of Board of Medical Examiners.

Moving Pictures: (1) The Valves of the Heart in Action. (2) Endocarditis and Valvular Disease, (these through the courtesy of the American Heart Association and the Heart Division of the North Carolina Tuberculosis Association). (3) The Birth of the Cancer Cell and the Effect of Radium Thereon, by Dr. H. H. Bass, President, North Carolina Society for the Control of Cancer, Durham.

Presentation of New Officers.

Adjourn sine die.

SECTION MEETINGS

SECTION ON PUBLIC HEALTH AND EDUCATION

TUESDAY, APRIL 16, 2:00 P. M.

(City Court Room, City Hall)

Dr. W. A. McPhaul, Charlotte, *Chairman*

1. Value of Long Internship: Dr. Wilburt C. Davison, Dean Medical School, Duke University, Durham.

2. Dental Health Education in Our Schools: Ernest A. Branch, D.D.S., Director Oral Hygiene, State Board of Health, Raleigh.

3. The Place of Life Insurance Companies in the Field of Public Health: Dr. L. A. Riser, Director Health Conservation, Pilot Life Insurance Company, Greensboro.

4. Rural Sanitation: H. E. Miller, Sanitary Engineer, State Board of Health, Raleigh.

5. Practical Phases of a Milk Control Plan: James H. Heald, Director Food Inspection, Winston-Salem.

6. The School Physician and His Relation to the Practitioner: Dr. Thos. J. Sassar, Director Public Health and Education, Charlotte City Schools, Charlotte.

7. The Venereal Disease Menace: Dr. W. W. Craven, Charlotte.

8. Venereal Disease, Our Greatest Health Problem: Dr. W. A. McPhaul, Charlotte, before General Session, Tuesday, April 16th.

SECTION ON PRACTICE OF MEDICINE

TUESDAY, APRIL 16, 2:00 P. M.

(Ball Room O. Henry Hotel)

Dr. Rort. T. Upchurch, Henderson, *Chairman*

1. Compression Therapy in Pulmonary Tuberculosis: Dr. J. W. Dickie, Southern Pines.

2. A Study of a Series of Over Four Hundred Examinations of Apparently Healthy Persons in Fifty Counties of North Carolina: Dr. Fred R. Taylor, High Point.

3. Tobacco Smoking and Blood Pressure: Dr. Wingate M. Johnson, Winston-Salem.

4. Sodium Thiosulphate in the Treatment of Metallic Poisoning: Dr. C. O. Abernathy, Raleigh.

5. Some Considerations of the Diseases of Middle Life and Old Age: Dr. Lewis G. Beall, Black Mountain.

6. The Importance of Diagnosing Effort Syndrome: Dr. Wm. Bernard Kinlaw, Rocky Mount.

7. Lantern Slides Showing X-ray Findings in Tumor of Brain and Skull: Dr. L. M. Fetner, Charlotte.

8. Diabetes in the Tuberculous, Management and Treatment: Dr. S. T. Crow, Asheville.

9. A New Era in Chest Study (lantern slides): Dr. G. C. Cooke, Winston-Salem, before First General Session, Tuesday, April 16th.

SECTION ON EYE, EAR, NOSE AND THROAT

TUESDAY, APRIL 16, 2:00 P. M.

(Florentine Room, King Cotton Hotel)

Dr. M. R. Gibson, Raleigh, *Chairman*
Dr. V. M. Hicks, Raleigh, *Secretary*

1. Tonsils: Dr. H. A. Newell, Henderson.

2. Some Remarks on Deafness of Focal Infection Origin: Dr. Geo. W. McKenzie, Philadelphia.

3. Obscure Sources of Focal Infections in the Posterior Nasal Sinuses: Dr. M. E. Bizzell, Goldsboro.

4. Retinal Arteriosclerosis and the Condition of the Retinal Arteries as an Index to the Cerebral Arteries and to the Arteries of the Body in General, with Pathological Slides: Dr. W. P. Speas, Hickory.

5. Tuberculosis of the Larynx: Dr. Joe B. Green, Asheville.

6. Endoscopy as an Aid in Diagnosis and Treatment of the Air Passages: Dr. V. P. Peery, Kinston.

7. Glioma, with Reported Cases: Dr. Frank C. Smith, Charlotte.

8. Optic Neuritis, Due to Salvarsan: Dr. C. W. Banner, Greensboro, before First General Session, Tuesday, April 16th.

SECTION ON GYNECOLOGY AND OBSTETRICS

TUESDAY, APRIL 16, 2:00 P. M.

(County Court House, Room No. 2)

Dr. George Johnson, Wilmington, *Chairman*

1. Practical Points in Obstetrics: Dr. George Johnson, Wilmington.

2. Prevention of Conception, Some Indications for Surgical Sterilization: Dr. Charles I. Allen, Wadesboro.

3. Laparotrachelotomy, or the Low Cervical Caesarean Section: Dr. T. L. Lee, Kinston.

Discussion by Dr. Ivan Proctor, Raleigh.

4. Lipoidal Injection of the Uterus: Dr. R. A. Ross, Durham.

5. The Treatment of Procidentia Uteri: Dr. C. S. Lawrence, Winston-Salem.

Discussion by Dr. R. T. Ferguson, Charlotte.

6. Sterility: Dr. Oren Moore, Charlotte.

7. The Care of the Expectant Mother: Dr. W. Houston Moore, Wilmington.

8. Tubal Pregnancy: Dr. David Rose, Goldsboro.

Discussion by Dr. R. T. Ferguson.

9. Surgery of the Female Pelvis from an Anatomical Standpoint: (illustrated), Dr. Ivan Practor, Raleigh, before Third General Session, Wednesday, April 17th.

SECTION ON SURGERY

WEDNESDAY, APRIL 17, 2:00 P. M.

(Club Room, 17th floor Jefferson Standard Building)

DR. DONNELL COBB, Goldsboro, *Chairman*

1. Chairman's Address: The Trend of Surgery—Dr. Donnell B. Cobb, Goldsboro.

2. Pelvic Inflammatory Diseases: Dr. David T. Tayloe, Jr., Washington.

Discussion by Dr. James W. Tankersley, Greensboro.

3. Pancreatitis: Dr. Foy Roberson, Durham.

Discussion by Dr. A. G. Brenizer, Charlotte.

4. Duodenal Diverticulum: Dr. Russell O. Lyday, Greensboro.

Discussion by Dr. B. E. Rhudy, Greensboro.

5. The Importance of Early Diagnosis and Treatment of Diseases of the Thyroid: Dr. W. H. Sprunt, Jr., Winston-Salem.

6. The Technique of Thyroidectomy: Dr. Hubert A. Royster, Raleigh.

Discussion by Dr. A. G. Brenizer, Charlotte.

7. Studies in a Fatal Case of Thrombo-angitis Obliterans: Dr. R. B. McKnight, Charlotte.

Discussion by Dr. A. G. Brenizer, Charlotte.

8. The Injection Method of Treating Hemorrhoids: Dr. Wm. L. Patman, Greensboro.

Discussion by Dr. L. D. McPhail, Charlotte.

9. Abnormal Ducts of the Urethra: Dr. Robert W. McKay, Charlotte.

Discussion by Dr. Fred M. Patterson, Greensboro.

10. The Diagnosis and Treatment of Acute Intestinall Obstruction Involving the Small Intestine: Dr. B. C. Willis, Rocky Mount, before Third General Session, Wednesday, April 17th.

SECTION ON PEDIATRICS

WEDNESDAY, APRIL 17, 2:00 P. M.

(City Court Room, 2nd floor, City Hall)

DR. L. W. ELIAS, Asheville, *Chairman*

Symposium on High Infant Mortality in North Carolina

1. Infant Mortality from Industrial Standpoint: Dr. LeRoy J. Butler, Winston-Salem.

Discussion by Dr. W. C. Verdery, Fayetteville.

2. Infant Mortality as Affected by Economic and Illiterate Conditions: Dr. H. H. Harrison, Asheville.

Discussion by Marion Yates, Greensboro.

3. Well Baby Clinics: Dr. Aldert S. Root, Raleigh.

Discussion by Dr. B. U. Brooks, Durham.

4. Infant Mortality and the Obstetrician: Dr. Oren Moore, Charlotte.

Discussion by Dr. J. B. Sidbury, Wilmington.

5. Chairman's Address: A Comparative View of North Carolina's Infant Mortality—Dr. L. W. Elias, Asheville.

6. Transfusion in Infancy: Dr. T. M. Watson, Wilmington.

Discussion by Dr. T. D. Walker, Winston-Salem.

7. Valve Formation of the Posterior Urethra in Male Children as a Cause of Urinary Obstruction (case report—lantern slides): Dr. Hamilton W. McKay, Charlotte.

8. The New-born: Dr. J. LaB. Ward, Asheville, before Third General Session, Wednesday, April 17th.

SECTION ON CHEMISTRY, MATERIA MEDICA AND THERAPEUTICS

WEDNESDAY, APRIL 17, 2:00 P. M.

(Florentine Room, King Cotton Hotel)

Dr. J. F. Nash, St. Paul, *Chairman*

1. Intravenous Therapy of Bi-Chloride in Acute Infections (case report): Dr. George B. Chiles, Durham.

Discussion by Dr. J. A. Martin, Lumberton.

2. Endemic Goitre in its Relation to North Carolina: Dr. Louise M. Ingersoll, Asheville.

Discussion by Dr. A. G. Brenizer, Charlotte.

3. Pneumonia Therapy: Dr. N. G. Wilson, Madison.

Discussion by Dr. Earl L. Bowman, Lumberton.

4. Neurologic Aspects and Treatment of Cardio-Vascular Disease: Dr. R. F. Leinbach, Charlotte.

Discussion by Dr. W. T. Rainey, Fayetteville.

5. Present Day Status of Digitalis Therapy: Dr. R. D. McMillan, Red Springs.

Discussion by Dr. E. J. Wannamaker, Charlotte.

6. Treatment of Uremia: Dr. A. B. Holmes, Fairmont, before Third General Session, Wednesday, April 17th.

CONJOINT SESSION OF STATE BOARD OF HEALTH AND THE MEDICAL SOCIETY OF THE STATE OR NORTH CAROLINA

WEDNESDAY, APRIL 17, 12:00

(Ball Room, O. Henry Hotel)

MEMBERS OF THE NORTH CAROLINA STATE BOARD OF HEALTH

A. J. Crowell, M.D., President, Charlotte.
Cyrus Thompson, M.D., Jacksonville.
Thomas E. Anderson, M.D., Statesville.
E. J. Tucker, D.D.S., Roxboro.
D. A. Stanton, M.D., High Point.
James P. Stowe, Ph.G., Charlotte.
John B. Wright, M.D., Raleigh.
L. E. McDaniel, M.D., Jackson.
Charles C. Orr, M.D., Asheville.

EXECUTIVE STAFF

Chas. O'H. Laughinghouse, M.D., Secretary and State Health Officer.
Ronald B. Wilson, Assistant to the Secretary.
C. A. Shore, M.D., Director State Laboratory of Hygiene.
G. M. Cooper, M.D., Director Bureau of Health Education.
H. E. Miller, C.E., Chief of Bureau of Engineering and Inspection.
F. M. Register, M.D., Director Bureau of Vital Statistics.
H. A. Taylor, M.D., State Epidemiologist.
George Collins, M.D., Director Bureau of Maternity and Infancy.
C. N. Sisk, M.D., Director of County Health Work.
Ernest A. Branch, D.D.S., Director Oral Hygiene.
F. R. Taylor, M.D., Director Bureau Health Maintenance.

ORDER OF BUSINESS

Report of Work Accomplished and Recommendations.
Discussions.
New Business.
Adjournment.

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

Nineteenth Annual Session

MONDAY, APRIL 15, 1929

(Auditorium Pilot Life Insurance Company)

Papers Limited to Twenty Minutes—Discussion to Five Minutes

President—Dr. C. C. Hudson, Greensboro
Vice-President—Dr. J. Roy Hege, Winston-Salem.
Secretary—Dr. F. M. Register, Raleigh

PROGRAM

9:30 A. M.

1. Call to Order by the President, Dr. C. C. Hudson, Greensboro.
2. Invocation: Rev. Chas. F. Myers, Greensboro.
3. Address of Welcome: Mayor E. B. Jeffries and Dr. L. A. Riser.
4. President's Annual Address: What Can We Do About Pellagra?
5. Report of Secretary: Dr. F. M. Register, Raleigh.
6. Report of Special Committees.
7. Appointment of—
   (a) Committee on President's Address.
   (b) Committee on Visitors and New Members.
   (c) Committee on Resolutions.
   (d) Other Committees.
8. Place of Public Health Nurse in Maternity and Infancy Work: Miss Hulda Cox, Durham.
   Discussion by George Collins, Raleigh.
9. Diphtheria Immunization: Dr. C. A. Shore, Raleigh.
   Discussion by Dr. A. C. Bulla, Raleigh.
10. What Can Outside Agencies Do in Cooperating With Health Departments: Dr. R. L. Carlton, Winston-Salem.
   Discussion by Dr. D. E. Ford, New Bern.

11. The Newer Trend of Health Education in Public Schools: Miss Reba Harris, Associate, Professor of Physiology, North Carolina College for Women, Greensboro.
Discussion by Dr. L. B. McBrayer, Southern Pines.

12. How to Sell Public Health: Dr. L. J. Smith, Wilson.
Discussion by Dr. E. R. Hardin, Lumberton.

13. A Health Survey of Pitt County: Dr. W. E. Futrelle, Greenville.
Discussion by Dr. C. N. Sisk, Raleigh.

14. Summer Camp as a Means of Caring for Tuberculous Children: Dr. C. W. Armstrong, Salisbury.
Discussion by Dr. P. P. McCain, Sanatorium.

2:30 P. M.

1. Election of Officers and transaction of business.

2. Making the School Child Healthy: Dr. L. B. McBrayer, Southern Pines.

3. American Public Health Association—Appraisal Form for Rural Health Work: Dr. W. F. Walker, New York City.
Discussion led by Dr. J. Roy Hege, Winston-Salem; Dr. J. A. Morris, Oxford; Dr. J. H. Hamilton, Wilmington.

6:30 P. M.

Dutch Luncheon—Health Officers and friends. (Florentine Room, King Cotton Hotel).

8:00 P. M.

Broadcast Program over Station WNAC (Florentine Room, King Cotton Hotel).

1. Essential Qualities of an All-Round Doctor: Dr. Thurman D. Kitchin, President Medical Society of the State of North Carolina, Wake Forest.

2. A Practical County Health Organization: Dr. Charles O'H. Laughinghouse, Raleigh.

3. Relation of Family Doctor to Pre-School Children: Dr. J. Buren Sidbury, Wilmington.

4. Preventable Diseases in Children: Dr. W. C. Davison, Durham.

WOMEN'S AUXILIARY TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

MONDAY, APRIL 15

(O. Henry Hotel, Room 220)

5:30 p. m. Executive Board Meeting.

TUESDAY, APRIL 16

8:00 a. m. President's Breakfast, honoring Mrs. Allen H. Bunce, President Woman's Auxiliary American Medical Association and State Officers.

10:30 a. m. Annual Meeting (Florentine Room, King Cotton Hotel).

OFFICERS

President—Mrs. A. B. Holmes, Fairmont.
President-Elect—Mrs. G. H. Macon, Warrenton.
First Vice-President—Mrs. J. Roy Hege, Winston-Salem.
Second Vice-President—Mrs. J. G. Murphy, Wilmington.
Third Vice-President—Mrs. Wm. Marr, Pinehurst.
Treasurer—Mrs. R. F. Warren, Prospect Hill.
Recording Secretary—Mrs. P. P. McCain, Sanatorium.
Corresponaing Secretary—Mrs. J. B. Brown, Fairmont.

COUNCILLORS

First District—To be supplied.
Second District—Mrs. H. W. Carter, Washington.
Third District—Mrs. Thomas M. Watson, Wilmington.
Fourth District—To be supplied.
Fifth District—Mrs. P. A. Yoder, Sanatorium.
Sixth District—Mrs. J. R. Hester, Knightdale.
Seventh District—Mrs. W. M. Scruggs, Charlotte.
Eighth District—Mrs. Frank Sharpe, Greensboro.
Ninth District—Mrs. C. R. Sharpe, Lexington.
Tenth District—To be supplied.

PROGRAM

MRS. A. BYRON HOLMES, *President,* Presiding

Invocation.

Welcome to Visitors: Mrs. W. P. Knight, Greensboro.

Response: Mrs. L. A. Crowell, Lincolnton.

Minutes.

Roll Call.

Address: Mrs. A. Byron Holmes, President.

Greetings from North Carolina Medical Society.

Unfinished and New Business.

Report of Officers.

Report of Councilors.

Report of Delegate to Auxiliary American Medical Association, Mrs. M. L. Stevens, Asheville.

Report of Delegate to Auxiliary Southern Medical Society, Mrs. C. Z. Candler, Sylva.

Address: Mrs. Allen H. Bunce, Atlanta, President Woman's Auxiliary to the American Medical Association.

Election of Officers.

Installation of President.

President's Message.

Adjournment.

WEDNESDAY, APRIL 17

10:00 a. m. Executive Board Meeting, Ladies' Auxiliary, (Room 220, O. Henry Hotel).

GENERAL SESSIONS

FIRST GENERAL SESSION

TUESDAY MORNING, APRIL 16, 1929

The first General Session of the Medical Society of the State of North Carolina was called to order in the Ballroom of the O. Henry Hotel, Greensboro, North Carolina, at nine-fifty o'clock, by Dr. Charles A. Julian, of Greensboro, Chairman of the Committee on Arrangements.

CHAIRMAN JULIAN: The seventy-sixth annual convention of the Medical Society of North Carolina will now come to order.

The invocation will be given by Dr. Charles F. Myers, Pastor of the First Presbyterian Church of this city.

REV. CHARLES F. MYERS: Our heavenly Father we thank thee that in the heart of each one of us there is a little plant called reverence that needs to be watered every day. So at the beginning of the sessions of this convention we come and ask thy blessing. We thank Thee that though we made strides in other things, in art and science and medicine and literature, that Jesus Christ stands just where He did 1900 years ago, that with the Galilean hills in the background and the fisherman's lake at his feet, the multitudes of men still crowd about him.

Our heavenly Father we thank Thee that Thou art the same Jesus today and will be forever and that human nature is the same, that these hearts of ours are the same, that they need cleansing, and that these consciences of ours are the same, they need pardon, and we thank Thee, our Master, that we can come to thee and that thou art the solution of every problem. We ask thy blessing upon these, our guests, the guests of our city. May their stay among us not only be a time of pleasantries but may it be a time of great profit.

We thank Thee that Thou hast called them to minister not only to body diseases but often to minds that are diseased too. We ask thy blessing. Deepen their affection for human nature and widen their sympathy, increase their insight, and may every one of them faithfully be stewards of Thine. We ask it with thy blessing in Christ's name. *Amen!*

CHAIRMAN JULIAN: Ladies and Gentlemen: It is a special privilege and a pleasure to introduce to you one of the best known men in North Carolina, known by nearly every man, woman and child. Of course, being the mayor of the city of Greensboro speaks for itself that everyone knows him. He is also the owner of the Greensboro *News*.

His Honor, the Mayor, E. B. Jeffries who will deliver the address of welcome. (Applause.)

HON. E. B. JEFFRIES: Ladies and Gentlemen: It is a great pleasure for me to be here this morning to welcome to Greensboro this splendid group of men and women. We have had a great many conventions in Greensboro during the four years that I have been the mayor of this city,

but no one group of citizens I believe are contributing more to the cause of humanity than are the noble doctors of this state. They have been on the firing line constantly, striving to better our health conditions, to improve our health and to make us mentally and physically fit.

Therefore, gentlemen, Greensboro gives to you its greatest welcome. Perhaps it may interest you to know a few things about the city in which you are meeting. I shall not tire you with a lot of detail because the city is here to speak for itself. I am sure that our good doctors of Greensboro will take great pleasure in showing you and telling you about the city in which we live. There are some things however that I think are outstanding.

One thing is the way in which we as citizens of this city undertake to find out what is necessary to be done for the common good and then go do it. We have been notable leaders, I think, in health work. Yesterday at the Health Officers' meeting I told you something of what we were undertaking to do. I regard this work as being outstanding because we are trying to get at preventable diseases, physical defects, and other things which produce chronic bad health and remedy them while there is opportunity. In that way we feel that we are building a healthier citizenship.

A good part of this work goes on in connection with our city school system. We are trying to reach the children when they are young. The public has supported this. But we are looking further than that, we say what's the use, for instance, to undertake to save the lives of our people and then turn around and jeopardize them every time they cross a railroad track? So the city in connection with the Southern Railway Company has undertaken to remove from the city all grade crossing hazards. A good part of that program has been completed. Perhaps you have seen some of these structures. The balance of the program is under construction and within twelve months there will not be a single grade crossing left in the city of Greensboro along the main lines of the Southern Raliway Company. (Applause.)

We think there is another field that needs the thoughtful attention of every citizen and that is the question of accident prevention. Of course, when I speak to you doctors perhaps about preventing accidents I may be appealing to you to assist in something that may, for the time being, rob you of a chance for medical service. But I know the doctors of North Carolina, and I know that they rise above the question of a small temporary gain for the greater benefit of all the citizens.

To be candid about it, we are killing too many people in North Carolina in accidents that should be prevented. The automobile, the great servant that it is of humanity, the great transformer of our ways of living and the great instrument it has been in abolishing of our previous ideas of distance, has also become the chief instrument of death by accidents. We must do something to bring about a more careful use of that machine so that our lives may be safer upon the highways. I do not know what the remedy is going to be but I do know that all of us should give that problem

our most careful thought and consideration. Let us see if we cannot in our good North Carolina way work out something to make our highways safer.

Greensboro is notable for its life insurance companies. It has been an outstanding city in the South and has become an outstanding city in the country for its development of this line of business. Naturally, we are interested in the work that you doctors are doing.

Greensboro has been foremost in a number of other things, chiefly in its planning for the future. We are trying now to plan our street structures, and our highways, our buildings, and our public utilities, our water supply so that we can meet the needs as the demand arises. We are also going one step further, we are looking to the day when we are going to need great recreational grounds and in connection with our school system we are not buying lots 50x100 or 50x200 or something like that on which to put a school building, but we have been buying property by the acre, placing our school buildings in the center of, say a 15 or 25 acre tract of ground where the children will have ample playground around the school and also where the children may study and be further away from the noises of the streets and the highways. We plan ultimately to develop around these schools neighborhood playground centers, using the school grounds and have supervised play. We are planning a further step, the city is trying, and has acquired much ground as the opportunity comes, to create a great system of connected parkways around our city so that we will always have these breathing spaces.

We have gone another step forward, we have placed our city under strict zoning regulations according to the most approved standards to the end that our residence sections will be protected as residence sections. A man who builds a house is assured that his neighbor must conform to approximately the same regulations as to the amount of open space which he must have about his house. We have restricted these outlying business districts making available everywhere that it is necessary a place for everything but insisting that each class of business stay in its own place.

You can catch, I hope, some idea of what we are doing as far as we can through our zoning laws, our strict building laws, our supervision of play, our acquiring of recreation grounds, a gradual and orderly development of what we hope to be a city regarded as one of the most ideal residence cities in the country. I want to tell you when you get a city where people say it is a good place to live it naturally follows that it is a splendid place in which to do business.

Gentlemen, I thank you on behalf of the citizens of Greensboro for this opportunity to welcome you here. I wish every one of you a happy stay while he is within our city and I assure you that not only will the physicians of Greensboro but every citizen, every man and woman assist you in every way it is possible to make your stay in Greensboro an outstanding one. We hope that within a short while we shall have the pleasure

of having you return again and hold another great convention in this city. (Applause.)

CHAIRMAN JULIAN: The second address of welcome will be delivered by one of our foremost doctors, Superintendent of the Guilford County Tuberculosis Hospital. He is also President of the Guilford County Medical Society.

I present to you Dr. J. L. Spruill, of Jamestown. (Applause.)

DR. J. L. SPRUILL (Jamestown): Mr. Chairman: His Honor, the Mayor, said it was a pleasure for him to stand up here and welcome you folks. I do not know about the pleasure part of it but I am mighty glad you are here just the same.

As President of the Guilford County Medical Association it is my duty to welcome every one of you here. I had a speech, Mr. Chairman, but I have forgotten it. However, we welcome you here, gentlemen, in the first place honestly because we want you here, because we are glad to have you here. We have wanted you here for two years.

When we met in Durham two years ago I happened to be on the Nominating Committee. We invited this great Medical Association to meet with us during its sessions of 1928, but at the same time we were asking for the Presidency. The Nominating Committee felt that Guilford County was trying to hog the whole profession so they compromised with us and gave us the Presidency and took the Society to Pinehurst.

Guilford County doctors do not know how to let loose when they get hold, so when you met at Pinehurst last year we invited you again and you kindly consented to come. I want to say to you that this great Society —the biggest in the state, Mr. Secretary, 135 strong—invites you here and every man is at your service. We are glad to have you.

We wanted you here for another purpose. You might call it a selfish purpose if you care to but we knew that this great Society would bring an inspiration to the medical men of Guilford County as no other thing could bring. We knew what it would mean to sit at the feet of the masters of medicine in North Carolina for the next two days and to listen to your scientific papers and to be allowed to take part in your discussions. We knew that when you left you would leave us better men and better doctors because of your having been here.

But, Mr. Chairman, glad as we are to have you when we stop to think about the last meeting that the State Medical Society had in Greensboro some fifteen years ago there is just a bit of sadness that comes into the picture. The personnel of old Guilford County Medical Association is not the same today, Mr. President, that it was fifteen years ago. A number of our best and greatest have passed over The Great Divide. Lips that bid you welcome then will not bid you welcome today, hands that grasped yours in hearty handshake are not here today, H. H. Dodson, John A. Williams, John W. Long, and numbers of others who could be mentioned, have answered the final roll call.

Nor, Mr. President, is this great Society the same as she was fifteen years ago. Scores of her greatest and best have passed away. It is useless to attempt even to number and name those who have gone. Edward J. Wood is not here, J. Howell Way is gone, I. W. Fasson, Charles Minor, W. L. Dunn, scores of others have passed away.

Mr. President, while we mourn their loss, and while we miss their counsels, still it is well and happy for us that we know that these men fought a good fight, that they kept the faith, that they finished their course. Consequently, there was given to them a crown of righteousness and reward which the Lord, the righteous Judge, held against their coming. Not only that, we know that "when their summons came to join the innumerable caravan that moves to that mysterious clime where each shall take his chamber in the silent halls of death, they went, not like a quarry slave secured to his dungeon, but soothed and sustained by an unfaltering trust, they approached their graves like one who draws the drapery of his couch about him and lies down to pleasant dreams."

I have often wondered, Mr. Chairman, if the spirits of the departed are allowed to return to their old haunts. If so, I have no doubt but that the invisible shades of these men are here today, smiling on this great organization which they labored so hard to perfect.

Numbers of changes have occurred in the last fifteen years. His Honor has mentioned several of them. I will not mention any more in regard to Greensboro materially. But, Mr. President, you remember that about fifteen years ago the women of our country rose up in their might and demanded the ballot. They promised us that if we would give them the voting privilege that they would show us something. Believe me, Mr. Chairman, they have kept the faith. (Laughter and applause.) They have shown us things, gentlemen, that we never expected to see. (Laughter.) They have shown us things that I will not mention this morning but will simply leave to your powers of observation. (Laughter.) They showed us something at the election last fall when they threw North Carolina into the Republican column for the first time in 30 years, much to the chagrin of the Democratic Party, and the joy of the Republicans. Unless I am mistaken, Mr. Chairman, they will show us something before you leave that you aren't expecting to see.

When we met here fifteen years ago there was no organized effort on the part of the women toward giving us any welcome or toward taking care of us while we were here. Today I am authorized, by the Ladies Auxiliary, composed of the wives and daughters of the members of the Guilford Medical Association, to bid you the warmest welcome in their name, to assure you that they have labored hard to perfect a program that will make your visiting ladies, particularly, glad that they came and that will make them wish to come again. They have a program of teas, suppers, dances, and if the weather permits automobile drives to the various parts of our county. We hope that the entertainment will be such that the visiting ladies will be glad to come again.

There is another change, Mr. Chairman, that has come to Greensboro since we last met in this city. You know about that time Greensboro was just beginning to get a little bit dry but the rivers flowed in dry places just the same and numbers of us sat in the shadow of the great rock in the weary land and took our martinis and mint juleps and none dared to make us afraid. Nothing doing now. Some of us old fellows, like Dr. Julian and Dr. Morris over there, when we consider how fearfully and wonderfully dry Greensboro is have felt like exclaiming with Kipling, "Take me somewhere East of Suez where the best is like the worst; where there ain't no prohibition and a man can raise a thirst."

Why, gentlemen, did you know that Greensboro is so dry that I was told the other day—I do not know if the Mayor will vouch for this story, I hope he won't—that a fire broke out here and the fire engine rushed to the scene of the conflagration and hitched on to one of the fire plugs and all she could get was a spurt of dust. (Laughter). The firemen had to put out the fire with a chemical engine and gunny sack.

Not only that, but out here at the Guilford County Sanatorium, the little institution of which I have the honor to be superintendent, we had a few patients to come in a short time ago. My laboratory technician put his report on my desk. I looked it over, and one after another I saw, "No sputum," "No sputum," "No sputum." I called him into my office and I said, "What does this mean?"

He said, "I don't know doctor, every one of them has a cough but when I got their sputum cups all I could find was a little bit of dust."

Then I remembered how dry Guilford County is and I told him that was all right. I don't expect you to believe that story. I don't believe it myself, but I just mention it in passing so that none of you need be disappointed because you have come to Greensboro and certainly nobody will have any less of a good time because Greensboro is dry.

Finally, in the name of the Guilford County Medical Association, with its 135 members, I wish to assure you one and all that every one of us stands ready to do your bidding, to give you a welcome here, to wish that this may be the best meeting the old North Carolina Medical Association has ever had and that every man and every woman will be delighted to come back and see us again.

I thank you! (Applause.)

Chairman Julian: Next on the program is the greeting from the Women's Auxiliary A. M. A., Mrs. Allen H. Bunce, President, Atlanta, Georgia.

(The audience arose and applauded.)

Mrs. Allen H. Bunce (Atlanta, Georgia): Mr. Chairman, Distinguished Officers, Ladies and Gentlemen: Only seven years ago a splendid, a far-seeing woman presented to the House of Delegates of the American Medical Association the request for an organization of doctors' wives to be known as a Woman's Auxiliary.

Not by the wildest flight of the imagination could she foresee that one of her successors would ever be honored to the extent I am today.

I am most appreciative of the honor of being with you, and I only wish I were better fortified to take advantage of that privilege. It has been a great satisfaction to witness the rather phenomenal growth of the Auxiliary and to observe the utter unselfishness of the women who compose it. They realize in this instance at least that they cannot be self-willed, but entirely subservient to the wishes of their husbands composing the medical societies, for the scope and the type of work they wish to do. There is no profession in the world today of which so much is expected as the medical profession. Bearing that responsibility, the doctor stands and has always stood in an unique position toward his fellowman. Any letting down of the standards of the medical profession, any personal dereliction or shortcoming, any act in contravention of its standards and ideals, seems far more unfortunate and far more disastrous in its results than similar conditions on the part of just an ordinary man.

The doctor's wife understands that very fully and completely and so her willingness to aid much and yet to aid in an unobtrusive manner. She knows also that because of these conditions, she has been obliged to do auxiliary work from time immemorial. The doctor of not so long ago was a big man mentally, spiritually and nearly always so physically. He cared little for money but craved knowledge, the power to help and the very words to heal were to him a benediction. He was an elder brother, a counsellor, almost as much nurse as doctor; he cared greatly for his patients, he stopped at nothing, and his devotion went parallel with his service. Could he have been all of that without the care and the understanding which his wife gave him? She also worked; she saved; she performed hundreds of menial tasks, and many times was obliged to even act as custodian of the small apothecary maintained in the back room of the doctor's office. Very few were the mistakes she made in the great care she entertained for that office.

The scientists, like Pasteur, with their discoveries revolutionized the art of medicine into a science. Preventive medicine found a place. Surgery became important in the saving of lives. The contagious disease doctors spread information about quarantine and isolation.

The doctor began to travel in a gasoline chariot. The telephone superseded the handy caller. Again, the doctor's wife kept pace with her husband, she accepted the changes and learned the reasons for them and was ever interested in the same problems.

Now we have reached the stage where the decline of radical conservatism is most marked. The medical profession demands an intelligent public. It can be made intelligent only by the dissemination of the right kind of information. The doctors now are asking of their wives not only the silent cooperation of other eras, but are giving to them the privilege of becoming their most valuable adjunct. There are innumerable ways of accomplishing this, but the most important is for the wives to tactfully and definitely seek

positions on the health and program committees of the various women's civic organizations and clubs with the purpose of assisting these organizations to avoid quack speakers and faith healers, and for them to take a large part in public health activities, acting as liason officers in the large communities where the women's clubs, P. T. A. Association and others, are extensively engaged in such programs, or themselves promoting such activities. Thus the State Auxiliary can be of the utmost value in promoting some of the objectives which the Medical Society within that state has before it. They are willing and more than anxious to be taught to do it. It is from this wonderful organization, the Woman's Auxiliary of the American Medical Association, that I present greetings and sincerest and best wishes for continued success to all of you individually and collectively.

There has been no state in the Union where the doctors have been more helpful than they are here in North Carolina. It is ever a joy to see your own beloved Dr. McBrayer and to hear him say that all is well.

To the wishes of the National Auxiliary, I wish to add my own and altogether we say—

Thy goings out, thy comings in,
Thy homes, thy friends, thy kith and kin,
Thy hopes and plans, thy work, thy rest,
God bless them all as He sees best. (Applause.)

Chairman Julian: Dr. J. S. Brewer, of Roseboro, will respond to the addresses of welcome. (Applause).

Dr. J. S. Brewer (Roseboro): Mr. Chairman, Ladies and Gentlemen: The story is told of a man who stammered who went hunting on one occasion with a man who had St. Vitus dance. They had one gun together. After they reached the swamp lands, the man who stammered saw a squirrel in a tree, so he asked the man with St. Vitus dance for the gun. He handed it to him and the stammering man took aim and shot at the squirrel and missed him. Just at that time the squirrel jumped around on the other side of the tree and the man with the St. Vitus dance saw the squirrel and turned to the man who stammered and said, "Give me the gun."

He handed him the gun. Just as he put it to his shoulder to take aim, he was seized with an attack, so he aimed very much in this manner (illustrating); finally he pulled the trigger and fired and killed him. The man who stammered turned and looked at him and said, "N-n-n-n-n-n-o wonder you killed him. You aimed all over the whole damned tree." (Laughter.)

So this morning I am substituting here for my friend Dr. McFadyen of Fayetteville, who is engaged in politics down there. I pity the poor fellow out today hauling voters to the polls in such weather as this. I don't have any speech to make and I am going to do like the man who had the

St. Vitus dance, I am going to just aim all over the tree and maybe I will hit the subject.

It it quite a pleasure indeed to respond to so cordial a welcome as we have just had from the Mayor of the city of Greensboro and the President of the Guilford County Medical Society. We of the Society thank you gentlemen most heartily for this cordial greeting and we accept it as expressive of the city of Greensboro and the membership of Guilford County Medical Society. We are very glad to be here this morning and our very presence testifies to our appreciation of the hospitality which you offer us.

Last year just about this time, I had the pleasure of attending the Fifty-Seventh District Rotary Conference here and I can assure you, ladies and gentlemen, that nowhere in all my life have I seen more splendid and generous hospitality than was displayed upon that occasion, and I am sure that there is going to be a repetition of the same here today. Greensboro is indeed a great city and a great people. As you no doubt know, the people in Greensboro are very much enthused over the greatness and the wonder of this city. The story is told of a doctor who died one day and went to heaven, as all doctors do. When St. Peter had checked him off at the gate, he commanded one of the guardian angels to take the doctor and show him over this glory land and acquaint him with many of the places of interest and wonder. They walked about for some time, viewing many places of interest and amazement. Finally they came to a tall and magnificent building of most exquisite architecture, but the doctor noticed that the windows were barred with iron bars and that the doors bore heavy locks and that at each entrance was stationed a couple of stalwart men acting as guards. So he said to his guide, "What is that building?"

The guide said, "That is the jail."

"Why, do they have a jail in heaven?" said the doctor.

"That," said the guide, "is where we put the souls from Greensboro, North Carolina."

"Why," said the doctor, "do you have to put those who come from Greensboro in jail when they get to heaven?"

"Because," said the guide, "if we should set them free here, they would every one go straight back to Greensboro." (Laughter.)

Ladies and gentlemen, a real treat is in store for us today. The Medical Society of the State of North Carolina could not have found a more suitable and hospitable city in which to hold the seventy-sixth annual convention. I can assure you that we will be royally entertained here. I started to say that those of you who wanted to play golf and play other games would find convenient facilities for that, but it is too rainy for that; but they do have wonderful playgrounds. They have wonderful colleges and theaters, if any of you are interested in amusement. The doctors and the lawyers and the business men are among the best. The women are among the fairest of the fair. You will find that their hotels are not surpassed anywhere you go. In fact, I think, ladies and gentlemen, I can

safely recommend everybody and everything in Greensboro to you except the bootleggers. I haven't had any experience with them, but if you will see me a little later in the day, I may be able to tell you something about them also.

In all seriousness, being commissioned as I am by the President of this Society to speak for the Society, I most heartily thank Dr. Spruill and the Mayor for their cordial words of welcome. We are very happy to be here and, before the Society's meeting is over, I predict it will rise up and accord the Mayor of the city of Greensboro its thanks for the wonderful way in which we are being entertained. I don't know but probably the Mayor may get several letters of thanks from some of the folks back home, patients of some of we doctors here, who, during our absence up here, have had an opportunity to get well and have done so.

So on behalf of the Medical Society of the State of North Carolina, I thank Dr. Spruill and Mr. Jeffries, the Mayor, most heartily for their kind and cordial welcome. (Applause.)

Chairman Julian: Ladies and Gentlemen: The time has arrived to present the gavel to your President. I now have the pleasure of presenting to you Dr. Thurman D. Kitchin, President of the Medical Society of the State of North Carolina. (The audience arose and applauded.)

President Kitchin: Mr. Chairman, Members of the Society and Visitors: This is the first opportunity I have had to thank the Society as a whole for the honor conferred upon me a year ago. It is a pity that custom forces me to display my wares immediately, the meager quality of which in no way is in keeping with the deep sense of obligation and gratitude which I feel. I want to talk to you this morning about the doctor and citizenship.

PRESIDENT'S ADDRESS

The Medical Society of the State of North Carolina 1929

Dr. Thurman D. Kitchin, Wake Forest

THE DOCTOR AND CITIZENSHIP

It is not time wasted, perhaps, to close our ears occasionally to the din of a complicated modern world as it beats against our doors and windows, and to turn our attention to an era when society was simpler than it is now. It was simpler because there were fewer people to inhabit the land, and these came together less often. Their wants were more easily satisfied, for the standard of living had not reached the point where *things* seem dominant, or had been heard the clamor for diversion by voices which would not be quieted. Such words as moderation, austerity, and integrity were peculiarly applicable in that less complicated era. I do not mean to convey the impression that I am dissatisfied with the era in which we are living now; well do I realize how futile it is to "cast leaves and feathers in last year's nest." We all understand that "To change and change is life, to move and never rest," and not one of us, if we could, would elect to go

back to that earlier time. But as we strive to gather the full meaning of life today, and face the problems with which our profession is beset, we may find that the light of other days will serve to make the present day clearer.

Descartes writes that . . . "The preservation of health is without doubt, of all the blessings of this life, the first and fundamental one; for the mind is so intimately dependent upon the condition and relation of the organs of the body, that if any means can ever be found to render men wiser and more ingenious than hitherto, I believe that it is in Medicine they must be sought for." This is merely a succinct statement of an axiom which explains in large measure why the physician has always played such an important part in the development of the individual and of society at large. An important element in the practice of medicine has always been the personal relationship between the doctor and patient. Before the mere fact of living became such an intricate process, before the days when a physician must needs establish a buffer between himself and an insistent outside world in order to conduct his work without fear of constant interruption, before the time when even the most insignificant matters came to the medical man tied with endless red tape, there was more opportunity for this relationship. The patient was then an individual unit, was an individual sharply distinguished from other patients; his idiosyncracies were known and considered by the doctor. The patient took comfort from the fact that the family physician "knew his constitution." There was something touching and beautiful in the confidence and devotion—even approaching reverence—which the whole family accorded him. And in his turn there was a spirit of undying loyalty and sympathy, and a will to serve which never knew shadow of turning. Medicine dealing with the masses was almost unknown. The only gestures in that direction were such simple ones as quarantine against infection at the ports of entry and wholesale vaccinations. As I mentioned before contacts between individuals were few, and therefore health measures which dealt with people at large were neither necessary nor desirable.

What was true of medicine in earlier days was in a measure true of religion, the simple tenets of which a Christian sought to follow by visiting the fatherless and widow in their affliction and keeping himself unspotted from the world; and, it may be added, honestly striving to "give himself with his alms."

The history of our government also may be traced back to simple and unpretentious beginnings, its main duties being such elementary functions as collecting taxes and keeping the peace, so that it did not require an expert in political science to be familiar with the diversified nature and intricacy of its ramifications.

Today, however, we are living in a crowded society, swarming with human beings who jostle each other at every turn. The serenity of those earlier days is invaded by a mad desire for speed. It is said that whereas in olden times a person missing the stage coach would wait patiently a

whole week for the next stage coach, now a person chafes with vexation if he must wait for the next section of the revolving door! Well may we implore the Almighty to "forgive our feverish ways!" In the present state of society each person is in close relationship with every other person. Remoteness is a term seldom applied nowadays. We can take down the telephone receiver and in an incredibly short time be in conversation with a friend across a continent, or beyond the ocean. We are given reason to believe that soon we shall see a friend as well as hear his voice while the telephone conversation is going on. The air routes are making the distant reaches of the world as accessible as adjoining states used to be. Through the magic of the radio we stride on ten league boots from New York to Dallas, from Miami to St. Paul. Thus society is today a network of human relationships which weave the fabric of our social garment. In the intricate design of this closely woven cloth is it to be wondered that individual threads are lost? Perhaps this is one reason why to the unthinking individual this has brought about a sense of lessened responsibility and a tendency to shift personal obligation by thrusting emphasis on society as a whole.

And not only through improved methods of travel and communication. Added to these are the present day methods of producing and distributing the materials of the world and the new intellectual freedom—all these and such as these are directly or indirectly traceable to modern science. Science has made life at once simple and complicated; simple, because it has furnished appliances for ease and comfort; complicated, because it has fired mankind with a desire to play with the toys which it furnishes, to test the machines which are themselves only a little less than human. Yet the tendency has been for these very machines to become despots in the commercial world. This robot rule tends to take from the workman the satisfaction of weaving his individuality into his product and by monotonous operation has lessened individual satisfaction in work. The human element is being lost from business. The prestige of custom has dwindled. Mass production has made life more rapid but less adventurous for the individual. Civilization has become so hurried and so flurried that sober thought is difficult and rare. Indeed, there are schools in operation now whose business it is to teach to a panting world the lost art of reflection! If the world be dominated by machines and society be controlled by money and the power of the herd, is it any wonder that the individual atrophies and the crowd hypertrophies!

With the world about us in a state of flux, it is inevitable that traditions which have stood as bulwarks since early days should show signs of tottering. The home is threatened by the clamor of new and daily increasing outside attractions; the searchlight is being trained on religion, and its shortcomings are picked out in an unbecoming glare of publicity. The so-called intellectual freedom sends men out with a keen eye for these defects. "Ye shall know the truth and the truth shall make you free"—this is their battle-cry. All of which is well and good if the truths they

parade are not *half*-truths, and if this freedom is not exchanged for license. Even if there is not evident an actual letting down of morals and diminishing of ideals, there is a change manifest in the methods of the church, a re-direction of its activities. No longer does it concern itself as formerly with the individual devil and the lurid horrors of Hell, offering redemption as a sort of fire insurance, but in the case of the individual is wont to emphasize the restrained life, the sacrificial life, faith *with* works—spirituality plus altruism. In dealing with the masses religion enters the field of social service and we have the institutional church, the denominational hospital—all manner of schools, homes and the like. In like manner the government has left its elementary functions and spread its tentacles in all directions, until there is constant, if not conscious, dovetailing of the various activities. Health measures are no longer matters for the doctor alone but are questions for society at large.

This brings us to consideration of the part which the doctor is to play in this new drama, for whether the medical profession likes it or not, this is on the boards to stay—that is, the government and philanthropic organizations are going to do more and more for the health of the people and concern themselves more and more with medical education and medical practice. This will be to the advantage of all if the particular thing undertaken can be handled in mass and if the scenery and stage setting can be made to conform to the whims and idiosyncrasies of the actors, but it will be a failure if it is lacking in either of these points. Manifestly the scene must be viewed from all angles, and consideration given to the producer, the cast, the onlookers, and even the stage hands without which the machinery would not function. It must be viewed not alone from the angle of the professional reformer; but also must be looked at with a view to consultation on all subjects touched on and all factors involved if the play is to move successfully. Necessarily the doctor is one of the most important factors but not the only factor. When health measures are uppermost in the minds of the people the lawyer, the minister, the experienced business man must be consulted, and the taxpayer, and others. New projects affecting society at large are apt to impinge upon the rights of many, and must be subject to modification and alteration, for the human equation must be taken into account at every turn. The doctor must realize that physical ills may be due to social and economic conditions as well as to physical and that the proper treatment may be social adjustment rather than medicine or a surgeon's knife. That is, he must study social pathology in relation to physical pathology. Conversely, the employer must realize that social and economic ills may arise from untoward physical conditions affecting employees, and that better housing and instruction in the laws of health may prove the most beneficient sort of arbitration—that is, he must know something of the elements of physical pathology in relation to social pathology.

Agitators and professional reformers are useful in dragging to light matters which might otherwise continue to lurk in dark corners, but these

people are rarely so well balanced as to determine what methods should be used and to bring them forth, and what percentage of the ultra-violet ray of publicity is necessary to nurse them to full health. Also there is the question of timeliness to be considered. Details of reform work should be worked out by consultation and by co-operation of all the agencies and factors involved.

Unfortunately many of our laws are made and executed in a spirit of class interest. The laws are passed because some set of people are particularly set against this or that thing, rather than after mature deliberation and study. Especially as regards the laws concerning the health of our people, both intelligence and human insight, coupled with co-operative specialization, must be employed if we are to avert disaster in the impending crisis. The Government—federal, state, county, and municipal—is going to do more and more in a medical way for the people, especially for groups as against individuals. We must be prepared, then, to accept this provision with a good grace and not only to cooperate but to cooperate intelligently and efficiently; likewise we must be prepared to preserve the amicable relations which have always existed between the medical profession and the State and to exert our influence toward outlining the correct part to be played by each. We cannot afford to do the work and carry out in detail something created without our participation or without a voice in its control. Precautionary measures are essential both for our own good, which is the narrowest view, and for the good of mankind.

The chief aims of society are: First, legal organization for protection, laws and regulations, establishment of property and individual rights—in short government; Second, religion or the spiritual welfare; Third, medical or physical welfare. But it is inevitable that the spheres shall overlap, therefore each specialized group cannot limit its attention to its own business to the exclusion of the interest of others. Each group must have a broad outlook in order to function and cooperate efficiently and wisely. This attitude of letting each group attend to its own field exclusively is responsible for many of the anomalies in our laws and social life today; also the practice of passing a law and then sitting complacently down and taking for granted that the thing has been accomplished goes far to explain, not only the law's delay but the law's ineptitude. Laws should be studied without bias and scientifically by all the groups in order to formulate statutes that will be wise and likely to accomplish the results intended. Such laws will not, of course, bring about such drastic and radical reforms as to satisfy the professional reformer, but the reaction against such laws will be less and a foundation will be laid upon which the envisaged structure can be built. Here again is the inter-dependence manifest and as science progresses in social relations the doctor becomes more essential. The spheres are inter-dependent and each should rely upon the other for technical detail in order to arrive at the best results, but as a matter of fact this is not being done. To illustrate, our legislature has recently passed a law to sterilize the feebleminded. This is a step in

the right direction but those who think that such a law will materially lessen the number of the feeble-minded in the State have disillusionment in store because such factors as these must be considered: (a) of the estimated 60,000 feeble-minded in the State only about 600 are identified and these are already segregated and cannot reproduce, thus sterilization would have no practical effect upon the number of feeble-minded reproduced, (b) This 60,000 is only an estimate, since they have not been identified and with the present state of our knowledge it is absolutely impossible to do so. The man does not live who can go about in this State and put his finger upon people who might be carrying in themselves cells capable of producing either a genius or a feeble-minded creature. When even the greatest alienists differ as to the sanity of an individual, what kind of an imagination does it require to fancy that science can select from among apparently normal people those who might produce the abnormal? (c) It is a matter of every-day observance that a large percentage, if not the majority, of those feeble minded individuals who have come under our personal observation have been born of parents who would never have been considered subjects for sterilization on any known basis. (d) Normal-mindedness is a dominant factor while feeble-mindedness is a recessive factor. Consequently, if a normal-minded person mates with a feeble-minded person, the first generation will all be apparently normal-minded and will have average intelligence. They will, of course, have in themselves the recessive factors but these cannot be detected. Therefore sterilization would catch none of this generation. Now, if a member of this generation mates with a member of a generation having the same inheritance, then about three-fourths of the resulting offspring will be apparently normal-minded and about one-fourth will be feeble-minded. That is, sterilization would catch only twenty-five per cent of the offspring from this mating. (e) Aside from the difficulties in determining who would be subject to such operations any attempt by law to determine those of sufficient mentality to justify marriage and reproduction would meet with such insuperable obstacles when attempt was made to put it into actual practice that it would fall to pieces. (f) The predictable characters from any matings are so extremely few that to attempt to breed a certain type of individual is absurd, to say nothing of the difficulties arising as to who should be the judge of the standard we are to produce and of what the standard should be and of how long that particular standard should be in style! (g) Finally, sterilization which only prevents reproduction without interfering with the sexual life, certainly in the type of patient for which it is prepared, would be license for immorality and this blow to morality would offset any good that might accrue to the physical man. Furthermore, is it not possible that this process might be used as much by the upper two per cent of the population to prevent reproduction as by the lower two per cent? It must be remembered that authorities consider and class as feeble-minded the two per cent of the population that occupies the lowest level of intelligence. Thus we will always have this proportion of

feeble-mindedness regardless of how high our general average of intelligence might develop.

Another example of the point in question, i. e., the anomalies in our lower social life today, is the Volstead act. Everybody admits the desirability, nay the necessity, of regulations imposed on physicians to prevent the use of alcohol as a beverage, and to prevent the doctor himself from becoming a bootlegger! But such a law should be studied from an unbiased standpoint and not regarded from a partisan or sentimental point of view nor yet through the blue spectacles of the reformer. It should be so framed as not to prevent the legitimate use of alcohol in the practice of medicine. (I hope doctors will not be allowed to prescribe alcohol as long as I practice medicine but this is a narrow selfish view—the very sort I am arguing against.) That many of our ablest doctors think that alcohol has no place in the physician's armamentarium does not invalidate the principle beceause the same is true of many of the remedies of today. Some are praised for one property by one physician and for an entirely different property by another physician. The real aim of the law is to prevent the social and economic evils that result from the use of alcohol as a beverage. But unfortunately alcohol for beverage purposes and alcohol for medicinal purposes have become interchangeable terms. And it is a reflection upon intelligent specialization and cooperation that the terms cannot be dissevered both in theory and in practice.

The narcotic problem, too, is one that can hardly be solved by legislation alone, no matter how stringent the laws against the drug handler, nor can it be solved by the establishment of narcotic farms. Its roots have gone deep; it is a medical rather than a penal problem. Every drug addict is not a criminal nor is every criminal a drug addict. The same abnormal tendencies which predispose to the drug habit may predispose to crime, the drug habit being a manifestation of an individual abnormality. And the addict takes drugs in an effort to adjust himself to his world. The maladjustment may be classed as a disease, and the addiction is a species of self-medication for the purpose of relieving the condition, for substituting pleasure for pain, seeming success for failure, hope for despondency. It is practically always begun for the purpose of bettering the existing conditions either imaginary or real. That it fails to accomplish this does not make the victim a criminal. The same applies to most self-medication through the use of which the victim in his ignorance thinks he is helping himself but in reality is doing harm. Drug addiction is simply a shining example of misguided self-medication.

Just recently a bill was introduced in the legislature of one of the great states of the Union to establish a state narcotic hospital to treat the drug addict. It provided that any citizen could report the addict, then if two physicians agreed that he needed treatment, the addict would be committed to the hospital for not less than eight months nor more than two years, and then discharged on such conditions as the department of public welfare might establish. That is, he must stay eight months regardless of

how much sooner he might be cured, and when released he could be compelled to report periodically the rest of his life to some welfare official.

This problem should be studied by all the interested groups and the findings pooled in order to reach the sound principle. The economist, the humanitarian and sociologist, the criminologist, the doctor, the psychiatrist, the moralist, all these might be expected to find it a fertile field for study. Even the fact that the drug factories produce annually more than ten times the amount of narcotic drugs necessary for the world's legitimate needs might be taken into consideration.

Another problem for society to face is that of quackery in medicine. Laws against quackery, of course, are necessary but education must be the final solution. The particular type of treatment employed in a given case should rest with the doctor in charge, but the law should see to it that every person who treats the sick should be prepared for this responsibility by meeting those educational and clinical qualifications which are required of regular doctors of medicine, because the foundations of these requirements are based on the pure sciences and adapted by the accumulated experience of all time and accepted as sound by the intelligent people of the world.

The more the public knows about disease the higher value it will set upon the service of an able physician, because health-education does not mean that lay persons will become doctors. Rather it means that people will be taught such fundamental facts as knowing that the body reacts according to certain laws, that these laws must be observed or harm will result, that the body requires skillful management and repairs when it fails to function properly—these principles will serve to impress the fact that when the body is out of fix an expert,—that is, the physician,—should be called, and not a quack or a devotee of patent medicines. We do not carry our watches when they need repairing to an unskilled mechanic; should the exquisite mechanism of the human body deserve less consideration than a watch? They will realize that bad health conflicts with the constitution of the United States which guarantees life, liberty, and the pursuit of happiness for "disease robs us of life, takes our liberty, and makes happiness impossible." And yet compare the amount of money spent by the government on the army, navy, and various other departments compared with what is spent upon the health of the people!

And what a spectacle in this day, when everybody recognizes that the proper solution of affairs depends upon making use of all available knowledge from whatever source, to see that the appropriation authorities of a great state say that a doctor's views should not be considered in connection with the appropriation for the state health department in general and the State Laboratory of Hygiene in particular, because forsooth the doctor is vitally interested in that department of the State's work. The inference is that views, opinions, and suggestions would be considered if coming from any class of persons whatever, provided it knows nothing concerning the problem at hand. Shall such policies be settled in terms of

expert bookkeeping alone? Shall they be settled without regard for the very thing they are intended to foster—human welfare? What a negation of specialization with cooperation, which is the mudsill of intelligent progress.

An eminent physician with broad humanitarian interests has said that the time will come when the culture of a nation will be estimated according to the mutual relations between medicine and the people and that we must strive to improve man individually and collectively, by scientific research into the wants and needs of mankind, and apply preventives and remedies for mankind's physical, intellectual, and moral dangers and defects and through this medicine can create that power which alone protects individuals against despair and nations against wrecks.

The newer developments in our field such as government aid, free clinics, institutions, etc., meet a certain demand and the public will use them and unless we provide and control the handling of this practice of medicine in the mass it will probably be forced upon us by the public ever ready to welcome what appears to be something for nothing. So that our real problem is to work out a method whereby these agencies will not constitute an unfair discrimination against the medical profession; and at the same time we must preserve for the people the best that is in them. In the long run anything which operates to the detriment of the medical profession will be hurtful to the public interests. Therefore, we must prepare to enlarge our usefulness and perform our service to the public in such a way that our value as physicians and our influence as citizens may be preserved and enhanced.

There is never any danger that the doctor may work himself out of a job by advocating such methods of education and cooperative legislation because even if there were a cure for every disease, the variations in individuals would still require the services of a doctor. This is true because no two individuals will ever react in exactly the same way to the same stimulus and, moreover, everyone saved is a potential patient. Then, too, the wear and tear in the individual and the ultimate death preceded by complications will always require the service of a physician. And it may well be true that geriatrics may supersede pediatrics. The slogan "save the baby" may have to share its popularity with "Grow old along with me! The best is yet to be, The last of life for which the first was made."

The variation in the individual which so sharply marks it off from the machine-made product and which demands intellectual exercise and individual judgment and adjustment in each and every case is the very point which makes our profession so interesting and absorbing. The very fact that our education is never finished and that as long as there are patients there will be new things to learn is a challenge to the best there is in man. Our profession must work to advance our civilization because society, as has been well said, is like the bicycle rider "feeling safe only if moving and satisfied only when advancing."

But we must take care that the progress so much longed for is accomplished without radical and destructive measures and without an endless program of campaigns to make the world safe for this and safe for that until the very defenses we throw out to protect ourselves prove stumbling blocks and hindrances to progress. Instead, we must adopt the method of growth which appreciates and encourages the conservative instead of well meant but clumsy devices which fail to achieve the purpose for which they were intended. Our particular field is to increase mental and physical health, for by doing so we are improving thought and life and are building for a greater day. It is especially necessary in our complex society that our mental health be conserved because like delicately adjusted machinery our social life must be properly coordinated.

In view of what I have said about the changes which have taken place in all departments of life, what I am about to say now may seem paradoxical, but I wish to emphasize the point that the bedrock foundations upon which our civilization was founded still remain. I am thinking now especially of the old personal relationships of the doctor with the patient. These may be half hidden by that which is ephemeral in the new order, and may appear now and again under a new guise, but remain nevertheless. Indications are that medicine for the masses will be done more and more in a general way by the social agencies, but this can go only to a certain point. This should relieve the doctor of an enormous amount of perfunctory routine work, and release him for the study and practice of individual medicine, which is peculiarly his sphere. This should add prestige to the profession and zest to the work because the doctor would have real cases, and sufficient time and incentive to study them. When our society was simpler than it is now the direct relationship between the teacher and the pupil was the pivotal point of the education system but the method of our progress and the demand for standardization have made necessary a vast deal of machinery, some useful and some useless, operating between the teacher and pupil. Now the pupil is supervised by the teacher and the teacher is supervised by the principal and the principal is supervised by the county agent, and the county agent is supervised by the State supervisor, with apparatus all along the line. But with it all the interest of the sympathetic teacher in his pupil is the essential thing. Despite committees and boards and a multiplicity of organization and detail in the churches, nothing ever has yet taken the place of personal reverence and personal faith. And so it is in medicine: nothing can supplant the personal relationship of the doctor and his patient. After all is said and done, this will remain.

For society to continue onward and upward, there must be specialization with cooperation, therefore it is important that the knowledge of the specialist and the findings of the research man should be co-ordinated and pooled for the common good. Research is essential, and the conscientious research worker will always be the vitamine of scientific progress. In a large number of matters the physician must rely upon the research man

for technical information concerning his problems, but the technical expert often sees only a narrow angle, and it is the duty of the practitioner to mediate between the man absorbed in the purely scientific atmosphere of laboratory and library and the public absorbed in the practical atmosphere of everyday affairs. The doctor then must be prepared to interpret the important and useful findings of the exponent of the world of science in terms which may be of service to society at large. Surely the alert and discerning physician who applies these discoveries to the benefit of mankind deserves to share with the researcher some of the credit and glory which is the just due of both.

However, the present day program which practically demands that all teachers in medical schools do research work seems arbitrary and unwise. For work of this kind only a few are qualified, for research workers, like poets, are born and not made. When teachers are forced to do this work, it is usually done at the expense of the teaching of the student. In many instances such research is only a type of expensive advertising. For research by medical students, there is even less justification. In the first place, there is enough knowledge already at hand fully to occupy their time. In answer to the argument that it stimulates a student's interest in his work and encourages original effort, implanting a desire to search beyond the limits of the known, let it be said that if properly taught there will be sufficient inspiration and furthermore, every experiment he performs in the regular medical laboratory courses is a research problem for him, from which he should derive the stimulus and broadened outlook which is claimed for research.

Physicians have been so busy diagnosing and treating and preventing disease that the individual harboring the disease has almost been forgotten. Of course it is presupposed that doctors should know all there is to be known about the scientific side of medicine, the latest in diagnosis and in treatment, but even this is not enough since the reason for any of it to be done at all was, is, and always will be the patient. To focus so much attention on the patient is not a contraction of our horizon because every individual is a unit in society and the saving of this unit contributes to the ultimate saving of society as a whole. Undoubtedly we have in our scientific studies strengthened the tangible things in diagnosis and treatment. We must guard against the danger that the intangible, that is the human element, may be lost. With the test tube in one hand and the microscope in the other we have had no hand left for the patient. We must strive to develop an imaginary third hand. Without lessening the strength of either the test tube hand or the microscope hand this emanation from the heart, from the spirit may help the patient to keep up his courage and fight his way on. With all of our modern success and manifold accomplishments we can well turn back and take a few leaves from the doctors before the birth of our modern medicine. And from them the paramount lesson to be learned is that we must study the individual as a whole and understand his reaction. Amiel writing in his *Journal* in August, 1873, gave expression

to a text from which we might well preach today. "Doctors make mistakes," he says, "because they are not sufficiently individual in their diagnoses or their treatment. They class a sick man under some given department of their nosology, whereas every invalid is really a special case, a unique example. . . . . Every illness is a factor simple or complex, which is multiplied by a second factor, invariably complex—the individual . . . . who is suffering from it, so that the result is a special problem, demanding a special solution."

As civilization advances and science erases boundaries and increasingly difficult human problems and adjustments are pressing for solution, the physician must be more and more versed in the affairs of the world. He must guard against a narrow outlook, he must take an interest in the great issues of the day and when possible play an important part in deciding them, for it goes without saying that he must shoulder his part of the general responsibility. In whichever direction the world is advancing the doctor must be on the firing line.

I have tried to sketch for you in hasty outline the times in which we are living,—these breathless times in which we are hurled from one phase to the next; the changes which have taken place; the miracle of modern inventive power, which turns our world topsy-turvy, which Science says in triumph: "Behold, I make all things new." I have touched upon certain problems which legislation seeks to solve; I have tried to impress the need for specialization plus cooperation, especially in our own profession. And last of all, I have sought to bring home to you the truth that in spite of seeming chaos in these twirling times, basic things remain. To a person on a swiftly moving train objects seen from the window seem to be rushing pell mell in the opposite direction; the trees of the forest might be an army in rapid retreat. Yet if the train should stop he would find the trees standing firmly rooted, as they have been for decades, their roots going ever deeper and deeper into the sustaining soil. Does the motion of the train cause the leaves to tremble? Does soot and dust settle upon those nearest the steel rails? What then! The whole world knows that the rate of the train's speed, no matter what its velocity, affects in no way the roots of these denizens of the forest. The analogy is, I hope, clear enough not to need amplification; certainly we must believe that the speed with which we are living today is *not* undermining those fundamental principles upon which our civilization is based. We must realize that "through the ages one increasing purpose runs" and that that purpose is a wise and constructive one. Our part is to work with a will and to keep faith. Does the future seem dark? Take heart, the morning is coming—

"And not by eastern windows only
    Where daylight comes, comes in the light
In front, the sun climbs slow, how slowly,
    But westward, look, the land is bright!"

CHAIRMAN JULIAN: This is a wonderful address by a wonderful man, and as Chairman, I must say that this address will be referred to the Committee on President's Address appointed by the House of Delegates.

I want to give you a very unique thing. Johnson & Johnson wrote me the other day and said if I wanted to offer a prize for anything, they would send $25 in goods or $25 in cash for a prize. I wrote them and said, "Send the cash." I always want the cash. I told them I was going to offer it for them, not myself, the prize being entirely different from Johnson & Johnson, to the one who travels in North Carolina the greatest number of miles to this convention and remains until the end. That person is to receive the $25 in cash, which I have. The committee will be appointed by the President and will determine who, at the end of the sessions, receives the prize.

(Chairman Julian made several announcements.)

(President Kitchin took the chair.)

The Chair will appoint on the Johnson Prize Committee—Doctors R. B. Davis, G. G. Dixon, and R. W. Petrie.

Gentlemen, at all time we are gratefully conscious of our living friends whose generous cooperation is the finest promise of our endeavor, but in this memorial moment, you will recall with especial tenderness those who have recently been lost, those who have finished their labor, having earned their rest, and abide with us only in sacred memory and in ennobling inspiration. Even as we mourn their loss, we are proudly aware their influence cannot pass. We recognize their presence in the choir invisible of those immortal dead who live again in minds made better by their presence. I am going to ask that you stand while Dr. Van Poole gives the bivouac of the dead. Dr. C. M. Van Poole!

(The audience stood while Dr. Van Poole read the list of deceased members. See roster Second General Session.)

SECRETARY MCBRAYER: Mr. President and Gentlemen: Dr. C. M. Van Poole, a past president of this Society, has attended fifty consecutive meetings, and Dr. Cyrus Thompson is going to make some appropriate remarks in regard to this wonderful accomplishment that Dr. Poole has achieved. I present Dr. Thompson. (Applause.)

DR. CYRUS THOMPSON (Jacksonville): If I were in the habit of offering an apology for myself, I would offer an apology for myself this morning, but I never have apologized for myself. I have just thrown myself out and let it go at that. My friends have been unusually friendly to me, both among the laity and especially the profession in North Carolina. When my friends have wanted me to do anything, they have assigned me the task of doing it and they have not consulted with me at all. Like St. Paul, they have not conferred with flesh and blood at all.

Dr. McBrayer wrote me that this would be the fiftieth roll call for Dr. Van Poole of Salisbury as a member of the State Medical Society, an unparalleled record, and that I would be expected to say something on this occasion. I lay down in my bed one night and endeavored to think of

something that I might say and do you know I fell asleep and couldn't think of a single word and I haven't thought of anything until now, so I am just here full of the spirit of the occasion, standing on my feet, knocking out the bung, and letting nature unobstructed just simply caper.

Mr. President, I listened a while ago to the roll call of the dead. Death has reaped an uncommonly full harvest out of the medical profession in North Carolina during the past year. I recognized the names of my intimate friends, men that I loved and men that loved me. You say I grew sad over that recital. No, I did not. I don't grow sad over the death of my friends who have lived life well and artfully. I have contended among you for years that the finest of all the arts is the fine art of living.

McNairy is gone. McNeill, of Fayetteville, is gone. Wood of Wilmington whom I loved like a brother is gone. So they are gone and I have no sadness in my heart for their going. I just simply lift my heart up in thankfulness that He gave to the medical profession in North Carolina and to the citizenship in North Carolina such excellent examples of what men can be.

I have always stood up for medical organization. I remember how it was said when Howell Way went away that he had attended thirty-seven out of forty meetings of this State Medical Society. Coming up here yesterday morning with my friend, Dr. James M. Parrott of Kinston, he said, "Thompson, I am not as old as Way, but I have attended almost as many meetings as Way attended. I have attended thirty-four meetings out of thirty-five." This is a wonderful record.

There are other men older than Dr. Van Poole who have attended many meetings, but Dr. Van Poole, with his Dutch tenacity, has attended fifty consecutive meetings. (I suppose from his name that he is of Dutch ancestry.) Julius Caesar said of the French that they went to battle, but the men of the broad meadows, the Batavians, went to war.

C. M. Van Poole comes up here as a member of this State Society proud of his organization, and he doesn't come to one meeting and stop, he doesn't go like a Frenchman to battle, but, like a Batavian, like a broad-meadowed man, he goes to war and he stays there. He has stayed here for fifty long years, the only man that we have any record of in the State Medical Society who has answered here every meeting for half a century.

He is not old, is he? Look at him! He is about as old as I am, but he hardly looks that old. He has not been an obstreperous man. He has had honors of the Society and he has loved it.

I thought about him and it is the only thought I had the night before I dropped to sleep trying to think what I should say, and I said, as it was said of Moses, his eye is not dimmed and his natural force is not abated. I think he will come on here for ten years more, and when he makes sixty, though it is a kind of low grade, I am going to stand up here and move that we pass him on with distinction. (Applause.)

Let's just think of one thing. Who are the men that are the medical men in North Carolina? Who are the men of medicine in every state in this Union? Is it the fellow who stays back home and never comes to a meeting and cares nothing about medical organization? Doctor, he is not the man that pushes forward the wheels of progress of medicine for the healing of men and nations. The man who makes for progress in medicine is the man who, when the meeting calls, says, like Dr. Van Poole has said, and like the Psalmist David said, "I was glad when they said unto me, 'Let us go up into the house of the Lord.' "

Van Poole has counted the meetings of the Medical Society in the state of North Carolina fairly the house of the Lord, and every year he has been glad when they said the time for meeting had come and he has wanted to come up here. Van Poole has considered the meeting of the Medical Society of the State of North Carolina a sacred thing just as David considered the temple of the Lord. Why not? That business into which I will consent to pour my life and my energy is a sacred thing to me. The thing that you pour your life and your energy into is a sacred thing to you. God is here with us, even if we know it not, and we can say of ourselves in all of our efforts, we can say in our quiet moment, "It is God that worketh in us to will and to do of his own good pleasure."

It is a wonderful thing to make a record like this. I never can do it. I started out in practice of medicine before Dr. Van Poole and then I digressed, as many of you know, and had more or less fun and perhaps did some good, and then I got back to my first love, and the most that I can show is twenty-four out of twenty-five meetings.

Dr. Van Poole, I am going to have you stand up directly and let them see how much better looking you are than I am. I hope that the younger men in this profession will be as proud of themselves and as proud of their profession as Dr. Van Poole has been and that they will emulate his example and keep up the prestige of the profession in North Carolina and keep up the organization of the profession in North Carolina, and when they grow to his age that they can be as proud of their record as Dr. Van Poole is proud of his record and that the membership in their day will be as proud as the membership of this day is proud of the record which this man of medicine, this man of organization, this great physician and great citizen of North Carolina has made.

Doctor Van Poole, stand up. Just face the audience and let them see what a fine looking man you are. (Applause.)

Secretary McBrayer: Mr. President, the next speaker is Vice-Speaker of the House of Delegates of the American Medical Association, Secretary of the Georgia State Medical Association, Editor of the Georgia State Medical Society Journal, and Professor of Internal Medicine in the Medical Department of Emory University. I know you are all wondering how he makes a living, as none of these things pay anything much in money. So I will tell you that he is also the head and shoulders of a very

great clinic in internal medicine in the city of Atlanta and what he doesn't make in that clinic his wife furnishes.

It is a great pleasure for me to present at this time—and I thank the President for the opportunity—my friend, the friend of organized medicine, and when you know him he will be your friend, Dr. Allen H. Bunce, of Atlanta, Georgia. (Applause.)

MEDICAL CLINIC: DIFFERENTIAL DIAGNOSIS OF SOME FEVERS*

I. Undulant Fever

II. Typhus Fever

III. Miliary Tuberculosis

IV. Erysipelas Recurrens

Allen H. Bunce, M.D., F.A.C.P., Atlanta, Ga. (Invited Guest)

I. Undulant Fever

CASE REPORT

A consulting engineer, aged 31, came to our office with his physician on December 22, 1928, complaining of fever, occasional chills and nervousness. On December 10th he had a headache, backache, flushed face and was extremely nervous, but continued at work until December 19th when he went to bed on account of the fever and aching. He had suffered from night sweats, particularly after taking aspirin for the relief of the general aching over the body. His nervousness was very troublesome when he attempted to work. The chills were of a milder variety than the hard shaking chills of malaria which he had when a boy in southwest Louisiana.

He had malaria as a child; typhoid at 12; a tonsillectomy in 1919; an appendectomy in 1920. His general health had otherwise been good. His father died at the age of 72 of "kidney trouble." His mother was living and well. One brother was living and well. He had been married nine years and had one child six years old living and well. His wife was living and well. His habits were good. His noon meal was eaten at different drug stores when he took an occasional glass of milk. His height was 6 feet; weight 182 pounds (loss of 8 pounds in 12 days); blood pressure 120/90; pulse 88; temperature 99.2 F. General examination was essentially negative. His hemoglobin was 100 per cent; red cells 5,200,000; white cells 6,200—polynuclears 38 per cent; lymphocytes 47 per cent; mononuclears 15 per cent. No malarial parasites were found. Agglutination tests for typhoid group were negative. The Wassermann reaction was negative. His urine showed a trace of albumen. A specimen of blood was taken for culture. Rest in bed and symptomatic treatment was advised. We heard nothing further until January 1st when he and his physician returned with a chart showing a range of fever from 99.4 to 101 F. He complained of "hot spells," sweats, anorexia and insomnia. His weight was 175 pounds (total loss of 15 pounds.) His pulse was 100; temperature 100. My impression was that he had pulmonary tuberculosis but a careful examination of his chest was entirely negative. General examination was negative. Roentgen examination of chest was negative. His urine was normal. His white cells were 7,100—polynuclears 32 per cent; lymyphocytes 53 per cent; mononuclears 15 per cent. A diagnosis was not made. A second blood culture was taken. Rest in bed was advised.

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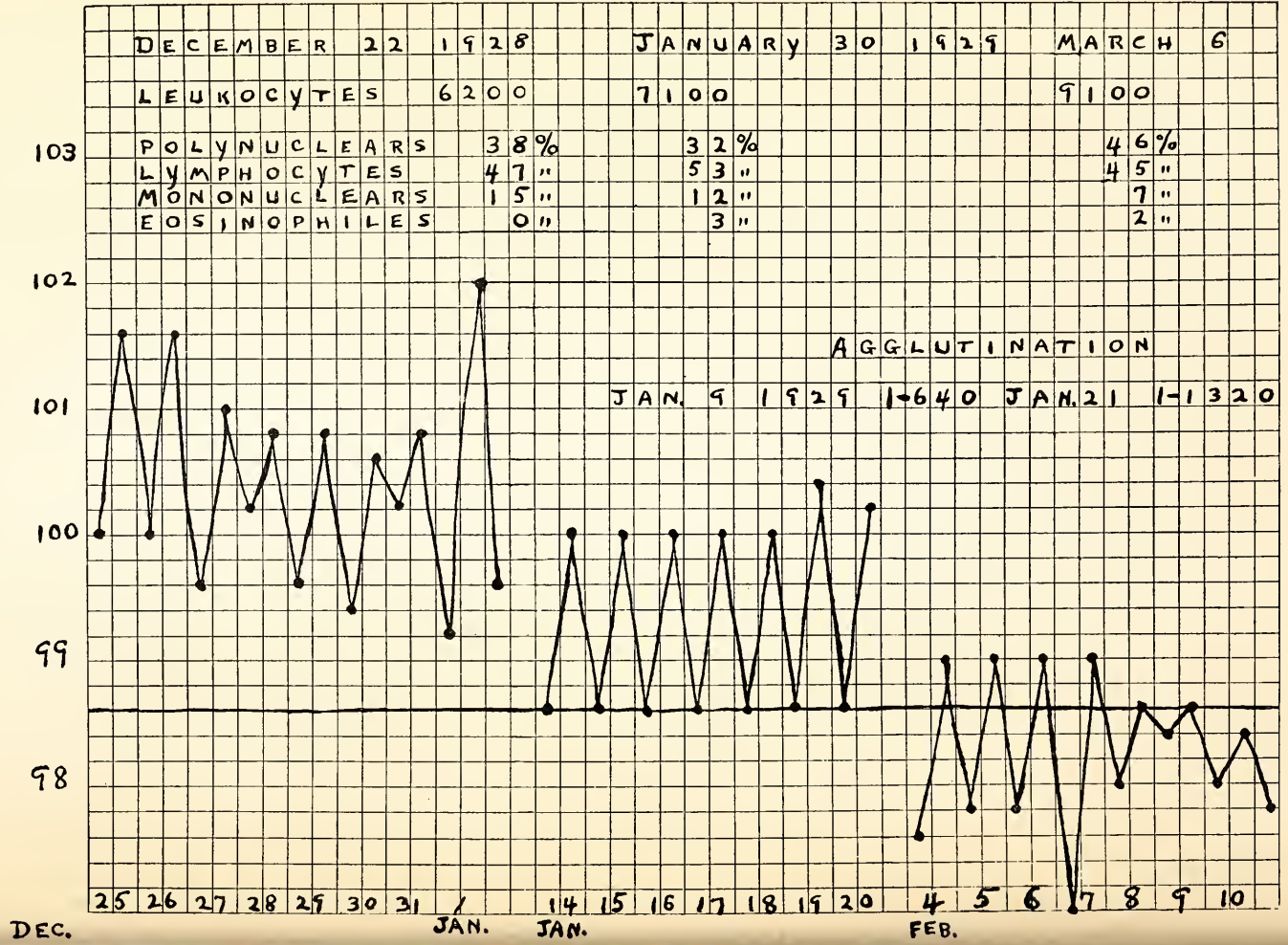
*Read before the Medical Society of the State of North Carolina, Greensboro, April 16, 1929.


DECEMBER 22 1928
JANUARY 30 1929
MARCH 6
LEUKOCYTES 6200
7100
9100
POLYNUCLEARS 38% 32% 46%
LYMPHOCYTES 47" 53" 45"
MONONUCLEARS 15" 12" 7"
EOSINOPHILES 0" 3" 2"
AGGLUTINATION
JAN. 9 1929 1-640 JAN. 21 1-1320
103
102
101
100
99
98
25 26 27 28 29 30 31 1 14 15 16 17 18 19 20 4 5 6 7 8 9 10
DEC.
JAN.
JAN.
FEB.

Later, after patient and physician had gone, while trying to explain to myself a low continuous fever, leukopenia and lymphocytosis I made a provisional diagnosis of undulant fever. Subsequent agglutination tests confirmed the diagnosis with a titre of 1 to 640.

With rest in bed and a high caloric diet his fever gradually became lower. However, on account of the persistence of the low fever we decided to give him a vaccine. Within three weeks this increased the agglutination titre of his blood from 1 to 640 to 1 to 1320 with a corresponding increase in the clinical symptoms.

Prevalence: The increasing importance of undulant fever in the United States is clearly demonstrated by Bancker's collection of 367 reported cases for the year 1928; whereas, Kavanaugh who gave an excellent account of his work in Kentucky with valuable suggestions for its control was able to collect only 112 cases for the year 1927. In this section during 1928 there were 52 cases reported in Kentucky, 39 in Georgia, and 32 in Tennessee. These were perhaps discovered because of the alertness of the serologists in the state boards of health of these states. No doubt many of them were discovered by making agglutination tests on sera which were negative to the agglutination tests for typhoid and paratyphoid. An interesting account, for example, of the work in Tennessee was given by Dr. William Litterer of Nashville. He stated: "In June, 1927, the Division of Laboratories, State Department of Public Health, of Tennessee, undertook an intensive investigation of undulant fever, tularemia and endemic typhus fever. These investigations were prompted by the fact that many Widals were reported negative in cases in which the clinical histories simulated typhoid or paratyphoid infections. Since that time we have been testing for these three fevers routinely all bloods negative to typhoid or paratyphoid fevers, as well as all negative Wassermanns. Prior to our investigations, undulant fever was unknown in the State. As a result of 1400 sera examined, we found 16 cases of undulant fever diagnosed clinically, epidemiologically, and serologically. Of this number we were able to isolate the micro-organism directly from the blood in seven cases. The micro-organisms isolated proved to be the Brucella melitensis variety abortus. There were 140 cases in which we obtained very high agglutination tests to undulant fever but we were unable to get the clinical histories from the physicians. We have every reason to believe that these cases were suffering from undulant fever. In addition to the undulant fever cases, we were able, out of the 1400 sera examined, to 'pick up' 37 cases of tularemia and ten cases were serologically and clinically confirmed. None of the cases, that is, undulant, tularemia and typhus, were diagnosed by the physician. None of our cases of undulant fever has been attributed to the drinking of goat's milk. All of them except three have received their infections from drinking milk from abortus infected cows. The three remaining cases received their infection from slaughter houses in which they attended and cleaned swine."

For a complete review of this subject see: Bancker, Evert A., Jr.: *The Increasing Importance of Undulant Fever.* Jour. M. A. of Ga. To be published soon.

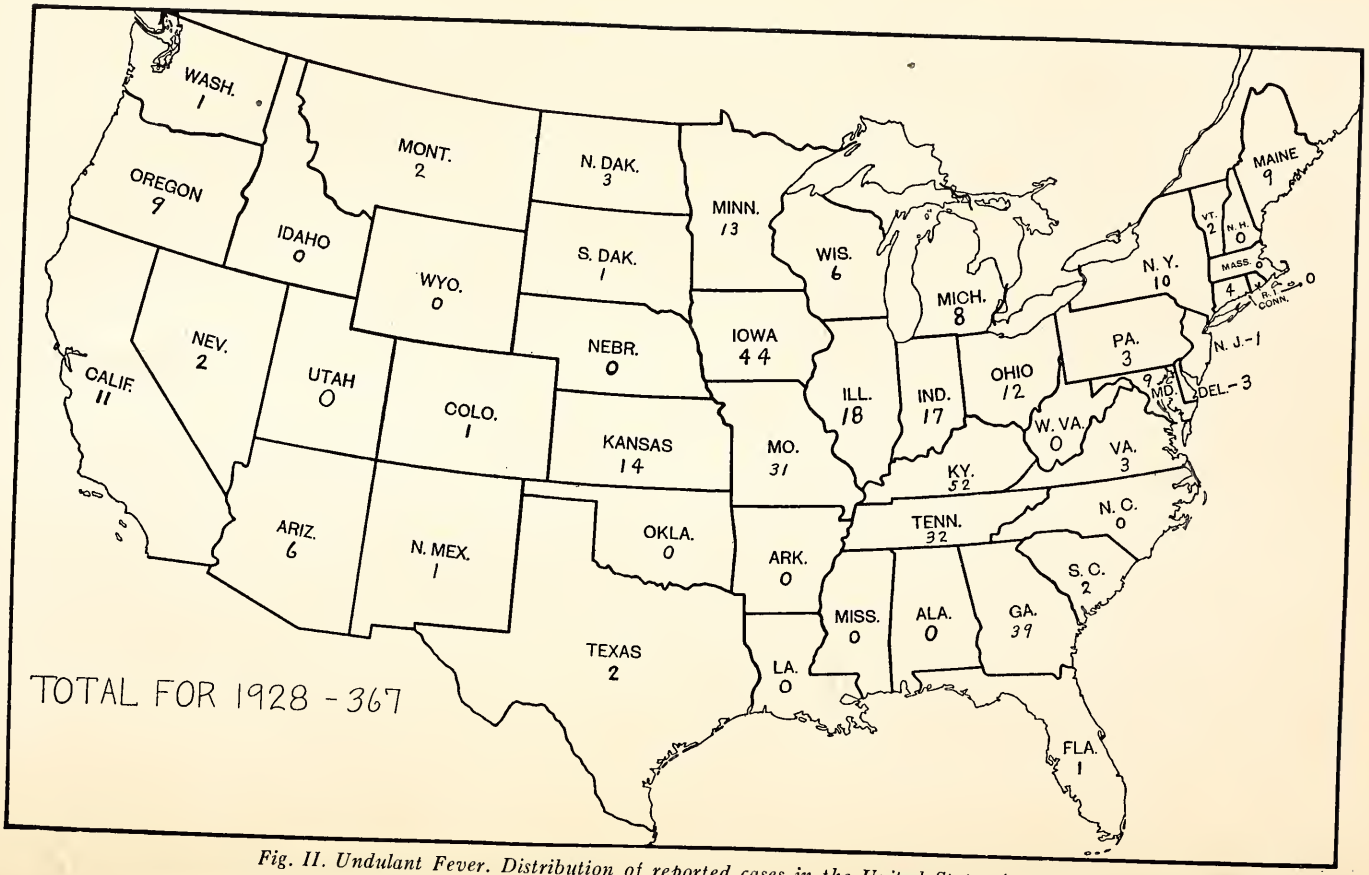


Fig. II. Undulant Fever. Distribution of reported cases in the United States for 1928.

Diagnosis: There are no pathognomonic symptoms of undulant fever. The onset is usually gradual with slightly increasing fever. Headache, backache, anorexia and insomnia are frequent symptoms. A feeling of chilliness with profuse sweats and extreme nervousness were the outstanding symptoms during the second week of the case reported above. Another patient of ours became delirious during the first few days of the fever and remained so for about two weeks. I could find nothing on physical examination to suggest the diagnosis in either of these cases. There was no abdominal distension in either case and no rose spots. We, therefore, concluded that they probably did not belong to the typhoid group. Neither showed a palpable spleen. The history in the second case I examined would have suggested the diagnosis had I inquired carefully. He was in the hospital in a state of delirium, but, no doubt, it could have been obtained by some member of the family. Neither of these patients showed any arthritic symptoms.

Since the symptoms are so variable a diagnosis can only be made by laboratory methods. Heretofore our most common fevers have been typhoid and malaria. The history, characteristic symptoms and clinical course give valuable suggestions in these, but we should not be satisfied with anything less than a positive diagnosis where this is possible. In typhoid we should prove the diagnosis by blood or stool culture or agglutination tests. In malaria we should prove the presence of the parasites in the blood smear. When these fail we should look for undulant fever, typhus and tularemia—in the latter the history being of paramount importance. There is usually cross agglutination in low dilutions in these fevers but in higher dilutions there are specific agglutinins. Agglutination tests are now being made by all of our state boards of health and they will make our diagnoses for us in all doubtful cases.

Treatment: Treatment has remained largely symptomatic. We have used vaccines in four cases with apparently good results. We have confirmed previous reports that vaccines increase the agglutination titre of the patient's sera. There was a corresponding improvement in the clinical symptoms in our cases.

Although the mortality rate is low—being usually given at about two per cent—the long duration of the illness which is usually from two to six months makes undulant fever of paramount economic importance.

SUMMARY

1. Undulant fever is scattered widely throughout the United States and is apparently increasing rapidly.

2. It is caused by the Brucella melitensis, the most frequent form being of the abortus variety.

3. It is contracted by drinking infected raw milk, usually cow's milk, although formerly and in its original habitat in the Mediterranean regions it was contracted almost exclusively from drinking goat's milk. A number

of cases have been reported from the butchering of infected hogs. One of our patients contracted it from handling an infected placenta of a cow.

4. It may be diagnosed positively by blood culture which, however, takes about twenty-six days to show a growth in the positive cultures, and by agglutination tests.

5. The prevention of its spread bids fair to become an important public health problem.

II. Typhus Fever

CASE REPORT

A traveling salesman, aged 55, entered the hospital on June 2, 1928, in a confused mental state. He became sick two days before admission with a chill followed by fever, headache and backache. His pulse was 96; temperature 100.2 F. He was well developed and well nourished. General physical examination was essentially negative. He was decidedly stuporous. His blood pressure was 110/80. Blood examination showed red cells 4,800,000; white cells 9,600; hemoglobin 95 per cent.—polynuclears 76 per cent; lymphocytes 20 per cent; mononuclears 4 per cent. No malarial parasites were found. A specimen of blood was obtained for culture. The urine showed a trace of albumen.

On the following day his pulse was 100; temperature 104 F. Active delirium had succeeded the stupor. Re-examination was otherwise negative. Typhoid was suspected but the onset seemed too sudden, the fever too high and the appearance of the delirium too early to be consistent with this diagnosis. He was prostrated and seemed to be growing worse. His blood picture remained the same. No provisional diagnosis was made until the morning of the fifth day. On this day we discovered a profuse pink macular eruption over the chest, abdomen and back. This led us to make a diagnosis of typhus fever. At first this disappeared on pressure, but later when it became more pronounced and darker it did not disappear on pressure. The Weil-Felix agglutination reaction was positive in dilutions up to 1 to 240. His temperature suddenly became normal on the fourteenth day but his delirium persisted in a wild form until the sixteenth day. His convalescence was marked by severe pains all over his body. He complained intensely of soreness, tenderness and pain for several days.

Prevalence: The United States Public Health Service has just this year issued a comprehensive bulletin on "Distribution of Endemic Typhus (Brill's Disease) in the United States," by Kenneth F. Maxcy, Past Assistant Surgeon, U.S.P.H.S. Dr. Maxcy made an intensive study of the epidemiology of this disease in the United States from the time it was first differentiated from typhoid by Gearhard in 1836. He quotes Anderson who made the statement in 1915 that "It is evident that typhus, instead of having disappeared from the United States, is present and has been present for years, at least in the large cities." Map number 2 (Fig. IV) shows the locations of cities and towns from which cases of endemic typhus were reported from 1915 to 1927 and is taken from this report by Maxcy. The figures in the Southeastern States give the number of cases of the disease in these states during the year 1928 as reported to me by the respective state boards of health. The following is a brief summary of the reports from these states for 1928:

Alabama—Dr. D. G. Gill stated there were 59 cases reported last year.

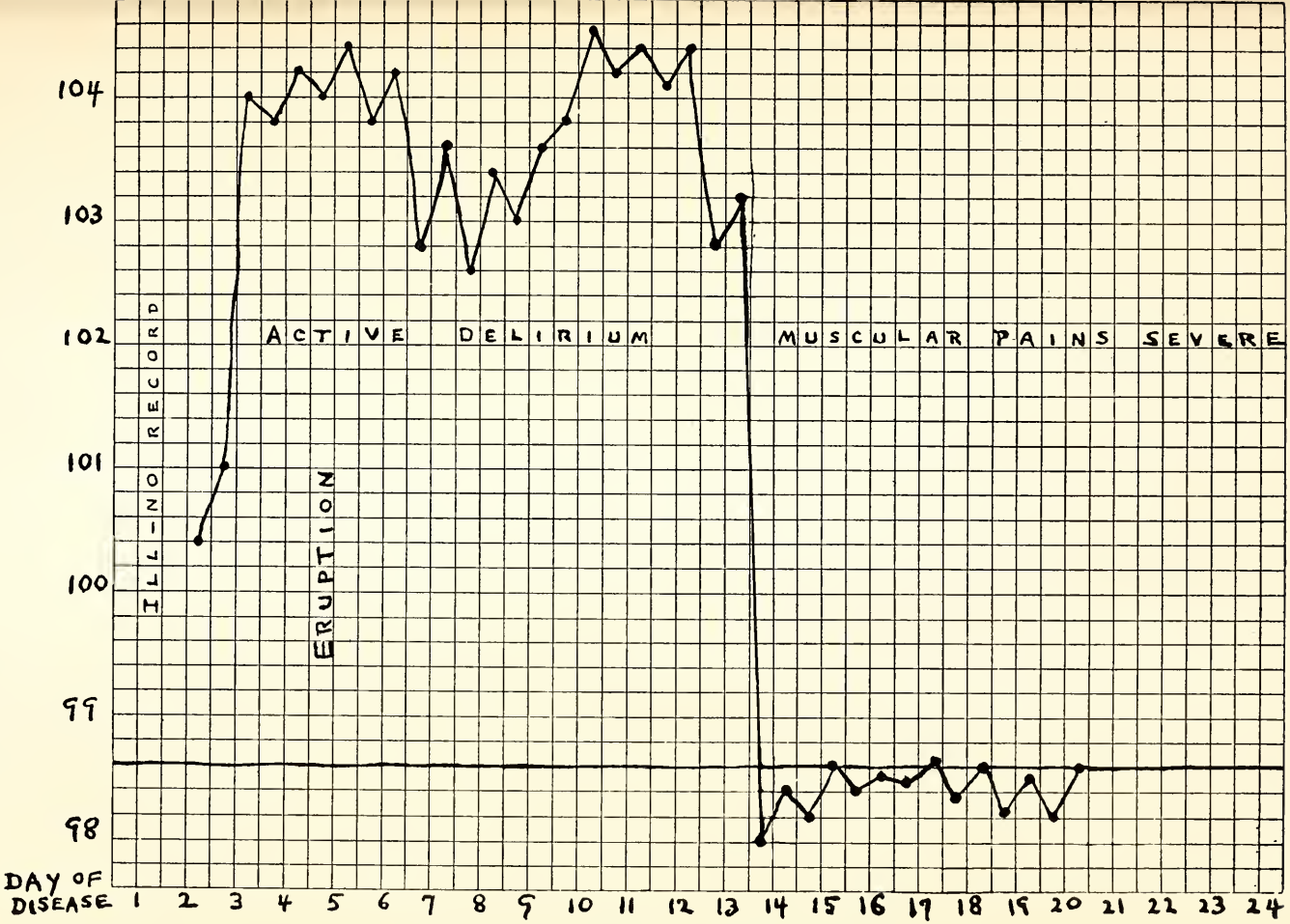


Fig. III. J. S. Typhus Fever. Temperature chart.

Florida—Dr. F. A. Brink gave a very comprehensive report of typhus in Florida for the years 1926, 1927, and 1928. He reported 16 cases for 1926, 45 cases for 1927, and 49 cases for 1928, or a total of 110 for the three years. The peak of the incidence curve in Florida for these three years was reached in the months of July and August, more cases occurring in August than any other single month. The sex incidence was shown for the years 1927 and 1928. In the former there were 30 males and 16 females. In the latter there were 37 males and 12 females. The average age for these two years of the male patients was 33.86, the youngest being one and one-half and the oldest 62. The average age of the female patients was 29.28, the youngest being 9 and the oldest 52. Another interesting observation is the fact that there was only one case in a negro, a male patient, reported in Florida for the three years.

Georgia—Mr. T. M. Sellars, Director of Laboratories, reported 48 cases in Georgia with three deaths.

Louisiana—Dr. J. A. O'Hara, President of the Department of Health, stated: "The report of one case was sent in by Dr. W. C. Ruckner, Surgeon-In-Charge of the U. S. Marine Hospital, on February 14th. The patient was an employee of the Marine Hospital and was admitted to the medical ward of that institution January 21, 1929. If other cases have occurred in the state we have no knowledge of them."

Mississippi—Dr. R. N. Whitfield, Director, Bureau of Vital Statistics, Jackson, replied: "We are sorry to say that we do not carry this disease on our morbility or mortality tabulations."

North Carolina—Dr. H. A. Taylor, Collaborating Epidemiologist, stated: "Typhus fever (Brill's disease) is not a reportable disease in North Carolina, and we have a record of only 7 cases being reported during 1928."

South Carolina—The director of vital statistics, C. W. Miller, reported: "In South Carolina during the year 1928 there was one case reported and no deaths."

Tennessee—We have previously quoted Dr. William Litterer's interesting remarks upon the prevalence of undulant fever, typhus and tularemia in Tennessee and the methods he used in detecting these. On March 30, 1929, I received the following additional information from Dr. Litterer: "Last year we had 11 cases of endemic typhus that were clinically, serologically and epidemiologically confirmed. They were widely distributed throughout the state. There were three cases that occurred in the same town but they had no relation to each other. There were several other cases not included in the above that we feel were typhus, but our data are not complete enough as yet to record same. All of our cases occurred during the summer and fall months. None occurred in the winter and early spring."

Texas—Dr. J. C. Anderson, State Health Officer, reported: "As typhus fever does not seem to be very prevalent in this state we are unable to furnish you with very much data concerning this disease in Texas. There

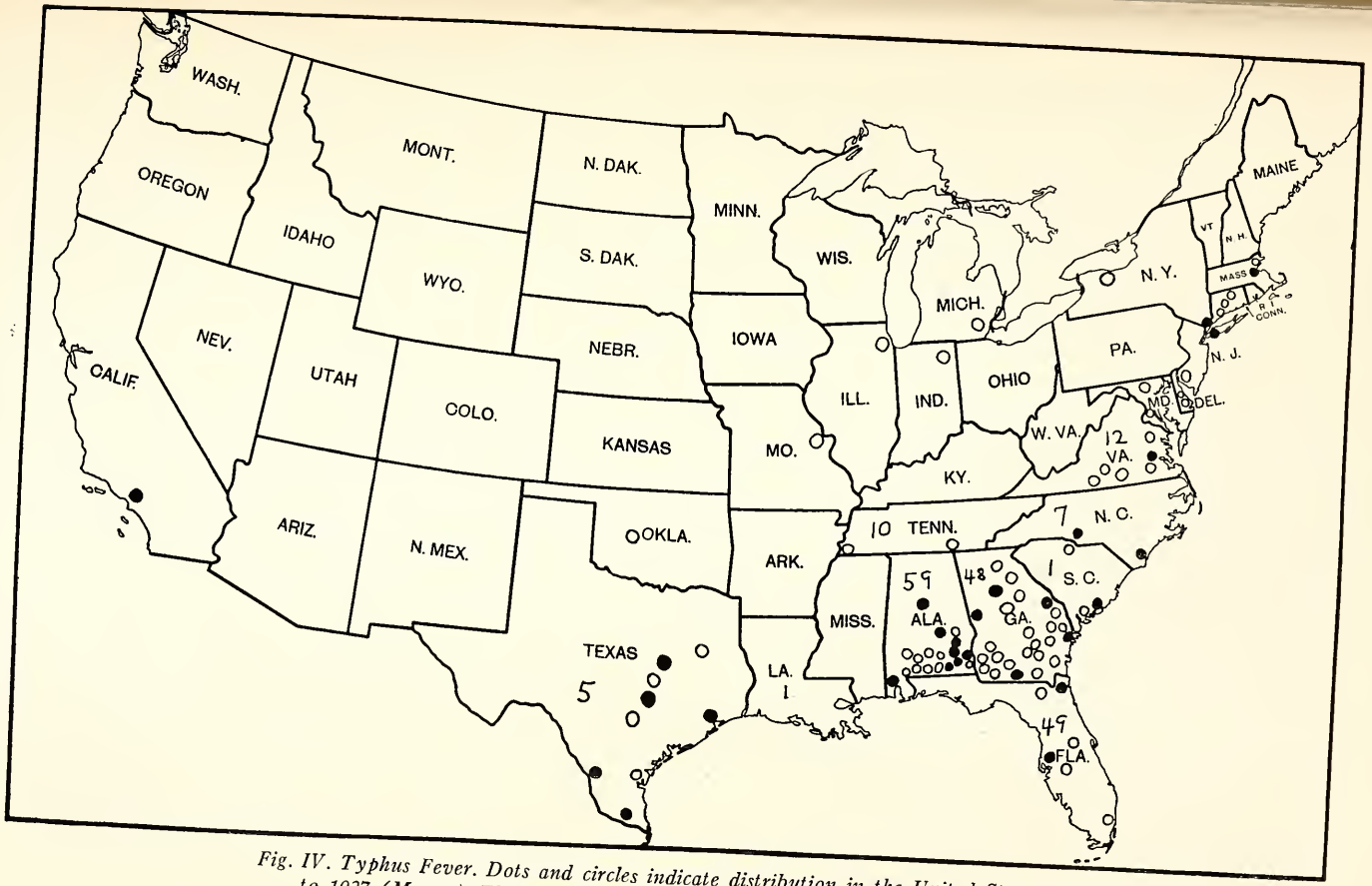


Fig. IV. Typhus Fever. Dots and circles indicate distribution in the United States1915 to 1927 (Maxcy). The figures indicate the number of cases reported in 1928.

were only 5 cases—2 of whom died—reported to the State Department of Health during 1928. These cases appeared in the southern part of the state."

Virginia—Dr. G. Foard McGinnes, Director of Laboratories, replied on March 4, 1929: "In regard to typhus fever in Virginia we had 12 cases during the year 1928 and one so far this year."

West Virginia—Dr. David Littlejohn, A.A. Surgeon, U.S.P.H.S., Director, Preventable Disease, State Health Department, replied: "Relative to the incidence of typhus fever in West Virginia, will say that no cases of this disease have been reported to the State Department, so far as our records reach back and for which I am very thankful."

These figures, together with Maxcy's report, show that typhus is endemic along the gulf and Atlantic seaboard. In reference to the spread of the disease Maxcy states, "The limitation of this disease geographically does not seem to be explained satisfactorily on the basis of direct person to person transfer or through the intermediation of the louse. Some agency, other than man and his parasites, would appear to be responsible for the preservation of the virus. This agency, by the insect alone, or an insect which feeds upon some host other than man, must be correspondingly limited in its distribution, or at least its capacity for acting as a vector to man must be so limited."

Diagnosis and Treatment: The clinical picture in typhus is clear cut. The onset is sudden, usually with a chill followed by high fever. There is early confusion, stupor or delirium. The diagnosis may be suspected but is not usually made until the appearance of the rash on the fourth or fifth day. This usually appears first as a general hyperemic blush followed by an abundant eruption on the abdomen, back and chest, sometimes spreading to the forearms, legs, and neck. The face is not involved. This characteristic, profuse eruption, usually clinches the diagnosis. A positive agglutination test known as the Weil-Felix reaction with the Proteus X 19 in dilutions of 1 to 80 and above establishes a diagnosis from a laboratory standpoint. The leukocyte and differential counts are within normal limits. It usually terminates by crisis on the fourteenth day. Malaria, typhoid, dengue and influenza are the chief diseases from which it must be differentiated. Its treatment is entirely symptomatic. The mortality is relatively low.

III. Miliary Tuberculosis

CASE REPORT

A college student, aged 19, entered the hospital on October 3, 1927, with profound prostration, emaciation and fever. He became ill four weeks previously with headache, nausea and vomiting. For two days he remained in his "Frat House" then went to his home out of the city. A diagnosis of typhoid fever was made and he received treatment at his home for seven weeks. His progress was unsatisfactory. An able consultant failed to find any positive signs on physical examination. His pulse rate

For a complete review of this subject see: Maxcy, Kenneth F.: *Distribution of Endemic Typhus (Brill's Disease) in the United States.* Reprint No. 1258, from the Public Health Reports, November 23, 1928. (Pages 3084-3095.)

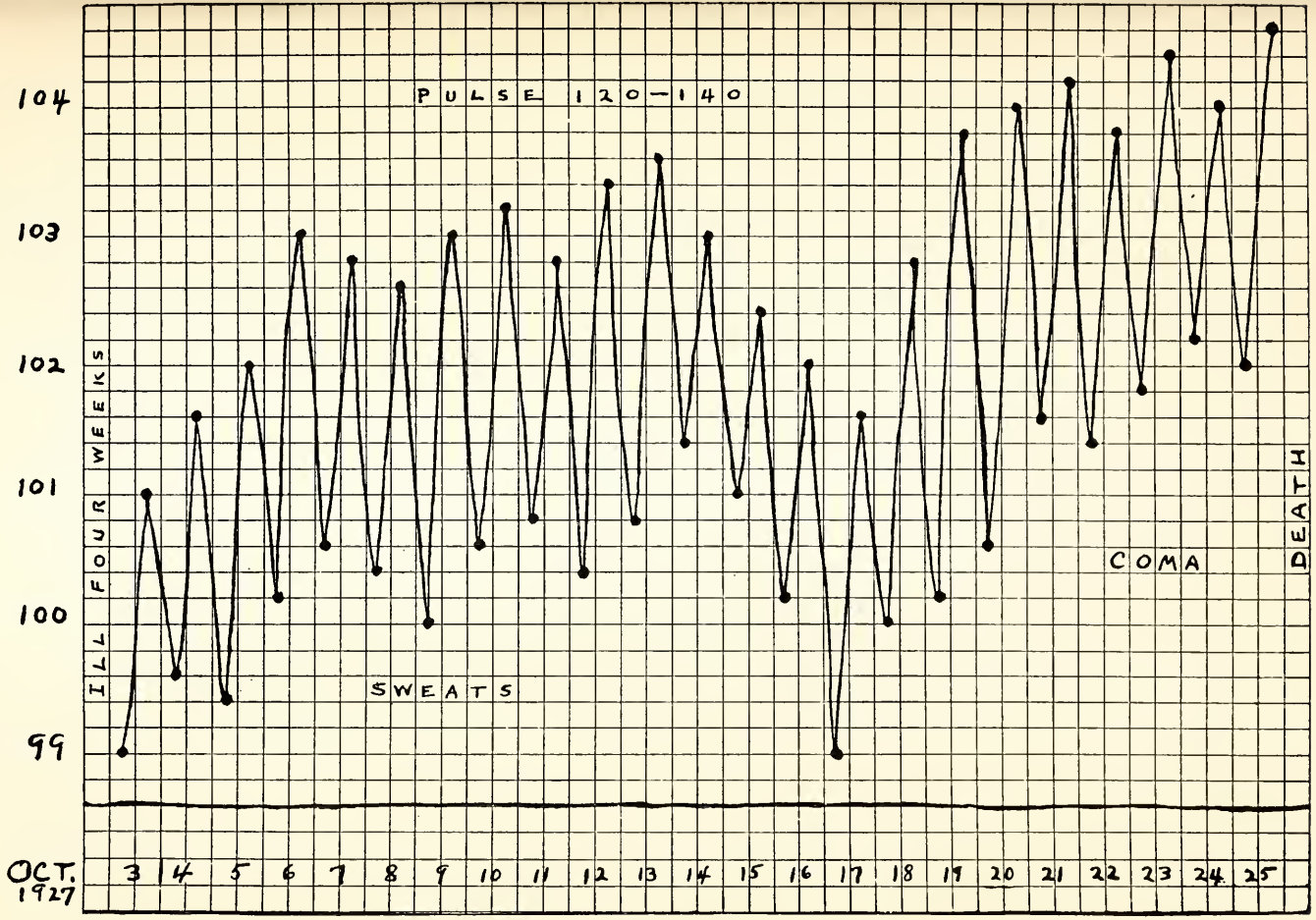


Fig. V. C. E. Miliary Tuberculosis. Temperature chart.

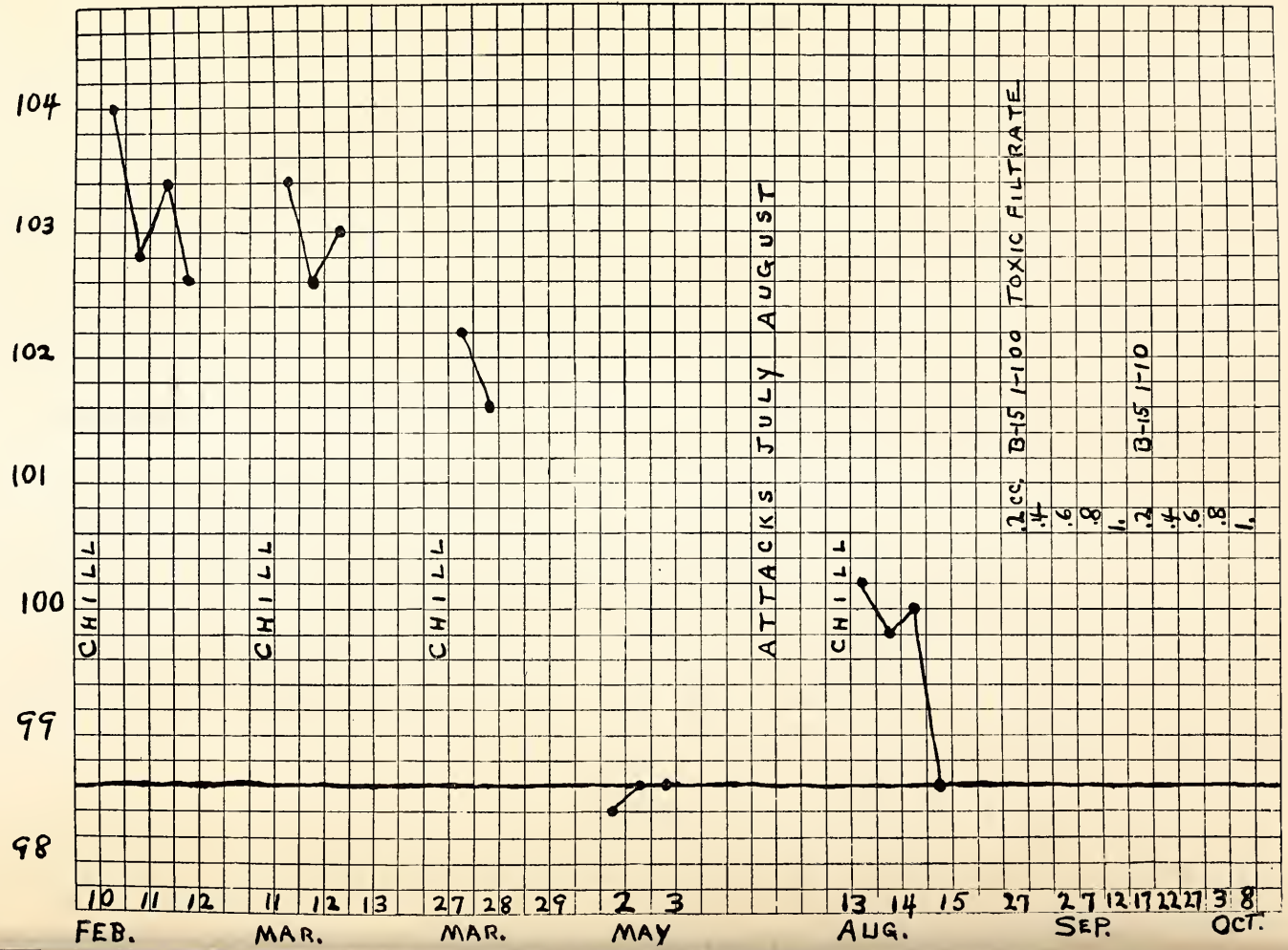

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Fig. VI. C. E. Miliary Tuberculosis. Roentgenogram of chest.

varied from 120 to 140; his temperature from 99 to 104 F. He was brought to the hospital in an ambulance. Examination showed an alert but obviously very sick patient. He was covered with a profuse sweat. His pulse was 120; temperature 99 F. Physical examination showed a few fine moist rales scattered throughout both lungs. The abdomen was not distended. Hemoglobin was 65 per cent; red cells 3,600,000; white cells 12,800—polynuclears 72 per cent; lymphocytes 14 per cent; mononuclears 14 per cent. No malarial parasites were found. Agglutination tests for the typhoid group were negative. His urine showed albumen, granular and hyaline casts. The prostration was out of proportion to the clinical findings. Roentgen examination of his chest showed miliary tuberculosis. Subsequently tubercles were discovered in the choroid. He developed tuberculous meningitis—tubercle bacilli being demonstrated in the spinal fluid. Coma was shortly followed by death.

Comment: The above case of miliary tuberculosis was discussed because of its importance from the standpoint of differential diagnosis. The diagnosis in this case might have been suspected because of the negative blood culture, stool culture and repeatedly negative Widals but even at the end of three weeks a physician specially skilled in the diagnosis of tuberculosis could find no positive clinical evidence of the disease. He considered the probability because of the fast pulse, the wide variations of fever in the forenoon and afternoon and the profuse sweats. The Roentgen examination of the chest confirmed his suspicion. Without this, time alone would have proved the diagnosis. The prognosis is hopeless.

IV. Erysipelas Recurrens

CASE REPORT

A merchant, aged 48, came to our office on May 2, 1928, convalescing from an attack of acute nephritis during which time he was kept in bed on a milk diet. His chief object was to find out about his "kidney condition."

On February 10th he became suddenly ill with a chill followed by high fever accompanied by pain in the "kidney region" after which he went into a "kind of stupor." He had had three similar attacks since the first. The nephritis was discovered and treated after the third attack. His family and personal history were negative. Height 5 feet 10 inches; weight 206 pounds; pulse 82; temperature 98.6; blood pressure 130/90. His gums were red and bled easily. His entire pharynx was dark red and his tonsils cryptic and apparently infected. General examination was otherwise negative. Hemoglobin 95 per cent; red cells 4,200,000; white cells 7,000. Differential count normal. Wassermann was negative. No malarial parasites were found. Blood chemistry was normal. 'Phthalein output was normal. Urine normal. Roentgen examination showed one apical dental abscess and increased density of the left antrum. We suggested: (1) Removal of abscessed tooth (2) Tonsillectomy (3) Treatment of antrum (4) Treatment of gums.

He returned home, had the tooth extracted and the antrum drained. However, he continued to have attacks of chills and fever. His physician, on account of the periodicity of the attacks, gave him a therapeutic test for malaria. The attacks continued at intervals of from 14 to 30 days. On August 14th he was seen in consultation by Dr. W. E. McCurry of Hartwell. His pulse was 80; temperature 99.4 F. Physical examination negative except for "a diffuse reddish eruption with slight swelling on anterior surface left leg covering slightly more than middle third." Dr. McCurry made a diagnosis of erysipelas recurrens.

Comment: Erysipelas is caused by a specific strain of the streptococcus hemolyticus. It is a common disease and may occur in both sexes

at any age. It is more common in the face than any other part of the body. In the average case the diagnosis can be made easily from the clinical picture. Recurrences and relapse are not uncommon.

In the case reported above the patient stated to me on a visit after he had recovered that he knew he had a redness on his leg when he had the chills and fever but that he didn't pay any attention to it. In fact, on his visit to me he stated that he had had a red place on his leg. Examination at that time was negative since it was an interval between attacks.

The treatment consists of the very early administration of the specific serum from the streptococcus erysipelatis which was developed by Birkhaug after the method of Dochez. The infected area should be kept clean with a mild antiseptic solution.

Treatment with the toxic filtrate furnished by Amoss prevented recurrences in the case reported.

Dr. W. D. James, of Hamlet, Third Vice-President, took the chair.

President James: Is Dr. Kitchin in the hall? (No response.) Dr. Kitchin has requested me at this point in the program to get Dr. D. W. Holt, of Greensboro, to introduce the distinguished guest and visitor, Dr. E. L. Bauer, of Philadelphia, Professor of Pediatrics at Jefferson Medical College.

Dr. D. W. Holt (Greensboro): Mr. President, as you all know, Dr. Ross G. Patterson, Dean at Jefferson Medical College, was to be on our program. We were greatly disappointed yesterday when we received a telegram from Dr. Patterson that his father was gravely, probably critically ill, fatally ill. He had to leave immediately for Colorado Springs. We got busy right away on the telephone and got a man to come in his place.

I take great pleasure in introducing to you this morning Dr. Edward L. Bauer, Professor of Pediatrics at Jefferson Medical College, pediatrician to the Jefferson Medical College Hospital, consulting pediatrician at Germantown Memorial Hospital, Philadelphia Hospital of Contagious Diseases, also Children's Seashore Hospital at Atlantic City and immunologist of the City Health Department of the city of Philadelphia. We are indeed glad to have Dr. Bauer with us, who has kindly consented to speak to us at this time. (Applause.)

Dr. E. L. Bauer, (Invited Guest, Philadelphia, Pa.): Mr. Chairman, Members of the North Carolina Medical Society: It was a surprise and a pleasure to be invited to come down to meet you all today. The circumstances, however, were not unmingled with considerable sadness because of the probable bereavement to my friend and colleague, Dr. Ross V. Patterson, who will be unable to address you tomorrow morning on the subject of "Angina Pectoris."

Being a pediatrician, I will also be unable to address you on that subject. When coming over from the train, I was asked to speak to you on any subject. I wondered just what might appeal to you. The subject of

"Scarlet Fever, the Serum Treatment Thereof," occurred to me as being a live topic in which we are all interested as clinicians, and I thought we might review that a little bit.

This subject of scarlet fever prevention is one that has been given considerable notoriety by reason of the success that we have had in diphtheria prevention. We have not had in scarlet fever an antitoxin as we have had in diphtheria nor have we had until recently any real attempt to prevent scarlet fever in a truly scientific manner as we have now in diphtheria.

The popularity of diphtheria prevention has, to no little extent, brought scarlet fever prevention and treatment to the fore prematurely. I believe that had it preceded diphtheria prevention, it would not have had the popular impetus or stirred the interest that it has at present. If it had, then I would prophesy that diphtheria prevention would have received a serious setback. We are certain, know in fact, that convalescent serum has a favorable influence in the treatment of scarlet fever. We know, too, that convalescent serum used after the manner of the Schultz-Charlton method, called the Schultz-Charlton reaction, gives us a distinct diagnostic aid in scarlet fever.

The Schultz-Charlton reaction, as you know, is the introduction of convalescent serum into the skin of the patient suffering with the disease or supposed to be suffering with it, and it will give us a blanched area in that immediate neighborhood if the patient has scarlet fever. Those two facts we can hold to as sheet anchors. The discovery of the organism by the Dicks, the streptococcus scarlatina, is not quite so fixed in my mind as the cause of scarlet fever. It has a great deal to do with it perhaps. It may be in symbioses with the real organism. We still do not understand or as yet have not discovered it, or it may in truth be the organism. If it is, then we are not so fortunate in scarlet fever as we have been in diphtheria.

You will pardon my skipping over the laboratory side and the truly technical side of this discussion, because I am a clinician. I wish to present this to you from the clinician's standpoint, showing you as far as possible what we have done or what we have not done with what the laboratory has already offered us.

The Dicks devised the Dick test for determining susceptibility to scarlet fever. I tried to determine the susceptibility of scarlet fever in approximately 4,000 children and I did get approximately the same results in so far as percentages of susceptibility and non-susceptibility as did Zingher when working at the same time.

I made another observation, however, that Zingher did not make, an observation that I think it is well for the clinician to examine. In performing the test, I found that the toxins were not standard. I also found that with certain toxins meeting the approval of the Dicks, I had amongst individuals who had recently had scarlet fever, bona fide unquestioned cases, twenty per cent of them were still positive to the Dick

test. You and I have all seen cases of scarlet fever occurring in individuals who had previously had the disease, but we have not seen many of them. As clinicians we are not going to the extreme of admitting that twenty per cent of our cases of scarlet fever are still susceptible to second attacks. As a clinician, I might accept one or two or three per cent, and I believe you will bear me out in that as to the occurrence of susceptibility in these post scarlet fever cases. That to me was an indication of weakness somewhere. It would be a long discussion to attempt to determine where. So I say in dealing with the Dick test, it indicates only to me susceptibility to the organism and the particular strain of organism from which the toxin had been derived.

This toxin will immunize temporarily individuals against that particular strain of organisms. It is distinctly a vaccinal protection. It will not last as does the immunization by means of diphtheria toxin in the prevention of diphtheria. Diphtheria toxin stimulates the production of a blood antitoxin content. The Dick toxins do not do so in scarlet fever, or we would have more lasting negatives to the Dick test.

The subject of antitoxin made by the same individuals is important. We have accepted the Schultz-Charlton reaction for diagnostic purposes in recognizing cases of scarlet fever. But when we use this antitoxin in place of a convalescent serum, we can put on one individual four different antitoxins made by different companies, with the same label however, stating that it is an antitoxin standardized against the Dick toxin and so forth, and the reaction will not be similar in more than three. Evidently something is wrong there. This we tried out in Philadelphia and found it to be true.

As to the value of the antitoxin, we must remember that in scarlet fever we have a disease with a distinctly low mortality. In two years' time in almost 5,000 cases at the Philadelphia Hospital for Contagious Diseases, we had 72 deaths. Realizing that we had the more severe cases in the hospital, that is a distinctly low mortality. It would take more than saving three or four lives in a group like that, that is, cutting it down to 68 or 65 or something of the kind, to prove definitely that the antitoxin did it. We must have something more than that. When we give the antitoxin to the severe cases, they seem to react favorably in most of them, but not all. That reaction may be really and truly a favorable reaction, or it may be due to the fact that these individuals have been sick longer than the history states, which is quite possible when these histories are obtained from foreigners, individuals who do not speak English or who are not particularly observant.

Again, this favorable reaction may result from something that you have all seen long before I entered in the practice of medicine or that many of you have seen. I recall that my daddy, who practices general medicine, remarked when I was a boy that in cases of scarlet fever of a severe type—they were induced to use diphtheria antitoxin in those cases because of the pseudomembrane in the throat; it might be a complicating

diphtheria—they were distinctly helped by the use of diphtheria antitoxin, if given, and the temperature would come down and the patient would be more comfortable. Of late years he has not made that statement and I called his attention to it when this hubbub arose about scarlet fever antitoxin. He said, "Well, I did make that observation, it is true, but later on it did not seem to me that it held water and I, consequently, stopped that practice."

Now as he stopped, the reason for it is this: Diphtheria antitoxin was concentrated, protein was removed, and he did not get a protein shock which scarlet fever reacts to favorably. The present supply of scarlet fever antitoxin is highly potent in its protein, both in content and in effect, and I wonder if this supposedly favorable action of scarlet fever antitoxin is not due to this high protein content, and whether we will not be disillusioned when the protein is removed and we do not get such favorable action from its use. That is something that we must note. I have not noticed particularly in our work at the Philadelphia Hospital for Contagious Diseases any decrease in the number of nephritis cases, complicating scarlet fever or middle ear or mastoid conditions, in using the antitoxin.

Now we have had to cut down on the use of the antitoxin and now it is used only in individuals who are severely ill and who do not show a positive sensitivity test to this antitoxin. Sixty per cent of the individuals so tested are disbarred from this treatment. Amongst those to whom it is given severe reactions occur in many instances, even though they did not prove sensitive to it. The reaction is a most severe one and in most instances this reaction is more severe than the attack of scarlet fever we are attempting to cure. I am going to make another statement that it startling, but it is true. I have seen more children die of anapxylaxis following the use of scarlet fever antitoxin than I have seen die from scarlet fever. That is a serious arraignment, gentlemen. I hope that you will take cognizance of it in selecting your treatment, specific or otherwise, for this disease.

The reason we stopped the use of the antitoxin in the milder cases and in those that were showing the sensitivity test was because we wished to save these lives that we believed were unnecessarily sacrificed. I do not see enough in this summary to recommend the use of the toxin for immunization against scarlet fever. I do not see enough of value in the use of the scarlet fever antitoxin to recommend its use in treatment. The laboratory must have it returned to it by the clinicians as an unfinished piece of business. In the height of their enthusiasm, throwing it into the laps of the public, with all the publicity that it has had, it is a detriment to the progress of scientific medicine until it has been cleared up. Unfortunately, a good bit of this propaganda is organized, advertising efforts through commercial houses who are anxious, or were anxious, to sell their products. Incidentally, we have also used the recinolated products with absolutely no benefit to our patients or possible patients.

I do not want to throw cold water on your hopes. I do not want you to feel helpless. I believe the laboratory will bring out something sometime perhaps in the near future, more likely in the distant future, that will help in this horrible and alarming disease, but until then, let us keep our medical poise and do not grasp at straws, popular ideas or comparisons that after all prove either tangents to the truth or will-o'-the-wisps. I thank you. (Applause.)

President James: We are running rather late with the program. We have three other papers. I feel that the Society would like to say quite a little on the two previous papers, but owing to the fact that it is near the lunch hour, I am going to pass on to the new paper so that we can finish all the papers in this morning's session.

The next paper is from the Section on Practice of Medicine, "A New Era in Chest Study," with lantern slides, by Dr. G. C. Cooke, of Winston-Salem.

A NEW ERA IN CHEST STUDY

By G. Carlyle Cooke, M.D., F.A.C.S. Winston-Salem, N. C.

(From Section on Medicine)

Since Lennec invented the stethescope and so accurately described the physical findings of normal and abnormal lung conditions it is remarkable to reminisce and realize how long a period his teachings served almost completely to take care of our investigations of the chest. This is especially significant if we fully realize how much information in this phase of medicine has developed in the last decade. Since my day in medicine I have been able to count all the procedures on my fingers which were available for studying conditions associated with the chest. At present however they have become so numerous and the findings so extensive that it is with difficulty that one may even enumerate them in one discussion. It is my opinion that the profession as a whole has not become thoroughly familiar with many of the new procedures as well as many conditions which are being overlooked. Many conditions are being continued to be placed in the category of incurables which if given the benefit of modern study might be easily abated. This is especially true amongst those who are not specializing in this new era of chest study and it is important that every practitioner at least be familiar with the possibilities in this field if he will be able to direct his patients to such aid, and it is for this reason that I am bringing this subject to you. I do hope to say more than simply that which will aid the profession as a whole in avoiding mistakes and give our whole population all that this branch of medicine has developed for it. Time will not permit me to give the names of recent pioneers in this line of work but we must not overlook the name of Chevalier Jackson who has led in its recent developments.

As I have already intimated the stethescope held forth for many decades as the only instrument available to help us in studying the morbid

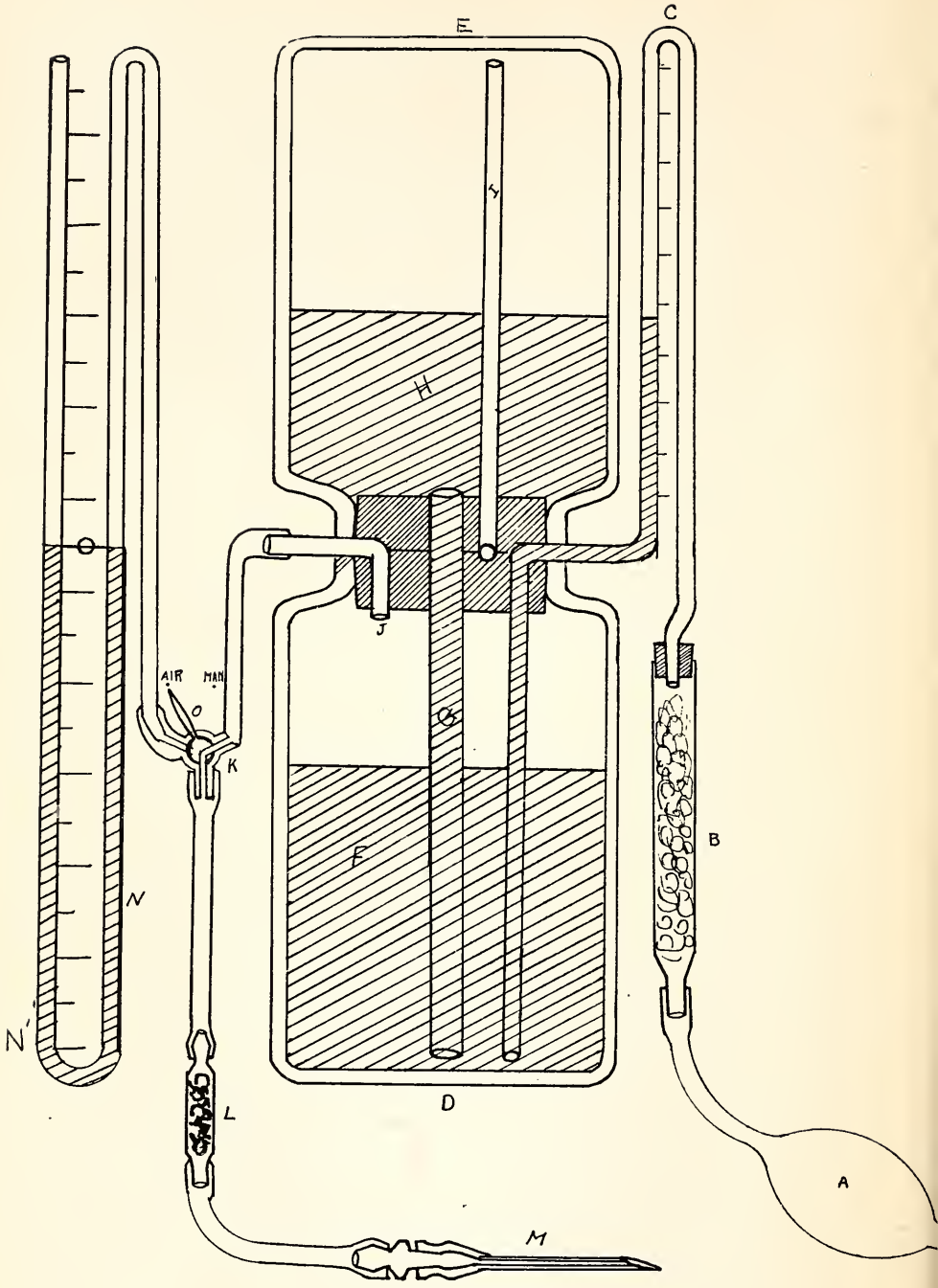
chest but within the last twenty years the X-ray has been added and within the past ten years to enumerate, bronchoscopy, esophagoscopy, pleuroscopy, gastroscopy, retrograde esophagoscopy, pulmonography, esophagonography and pleuragraphy have been added. And now I wish to tabulate some findings according to the method used and will make just those explanations on each which I think should be in common use everywhere.

APPARATUS FOR PRODUCING ARTIFICIAL PNEUMOTHORAX

The apparatus consists of two chambers, one placed above the other, with their openings put together by such means as will allow fluid to pass from the lower chamber into upper chamber by means of a tube. The fluid in the lower chamber being forced into the upper chamber by air, which air is held under pressure in the lower chamber equal to the difference in the height of the fluid level in each chamber.

Air is forced by means of a rubber bulb A through a cotton filter D to a U-shaped glass tube parallel and level with the upper chamber C into the lower chamber F reaching all the way to the bottom and passed into the chamber midway between the extremities of the two. By this means fluid contained in the lower chamber is of an antiseptic nature, is forced into the upper chamber H through tube G. The air contained in the upper chamber making its exit through tube I. The air that has been forced into the lower chamber F has been bubbled through the antiseptic fluid contained in it and thereby sterilizing the air. Because the fluid in the upper chamber is higher than that in the lower chamber when air ceases to flow through tube C the fluid from the lower chamber will rise in that tube to a level with the fluid in the upper chamber, thereby preventing escape of the air in lower chamber, that is automatically stopping the air in chamber. A scale is placed beside this tube C which is graduated so as to indicate the number of cubic centimeters of air contained in the lower chamber. The lower chamber is also connected by a tube J at its top with a two way stop cock K to another cotton filter L which is also connected to a hollow needle. The other outlet of the stop cock K is connected to a gauge N which is graduated to show cubic milimeters mercury pressure both negative and positive so that when the stop cock is turned in a position which will connect the gauge N with the hollow needle M negative or positive pressure will be registered on the gauge.

This apparatus is contained in a case which adapts it to absolute portability.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SLIDE NO. 1.

(1) Conditions diagnosed by X-ray alone.
  (a) Conditions of the heart
  (1) Size and shape
  (2) Position—position of enlargement
  (3) Pericardium
  (4) Great vessels

SLIDE NO. 2.

(b) Mediastinum.
  (1) Position
  (2) Size—Abscess—Inflamation—Neoplasm
  (3) Thymus gland enlargement
    Lymph gland enlargement

SLIDE NO. 3.

(c) Trachea.
  (1) Size—position—malformations
  (2) Stricture from outside pressure
  (3) Stricture due to disease of trachea
  (4) Foreign bodies—opaque

SLIDE NO. 4.

(d) Lungs.
  (1) Consolidation
  (2) Atelectasis
  (3) Emphysema
  (4) Cavities—T. B. or Abscesses non specific
  (5) Lymphangitis—Peribronchial—Peritracheal
  (6) Lymphadenitis—old or primary—recent or secondary
  (7) Foreign bodies—opaque—non opaque
  (8) Neoplasms

SLIDE NO. 5.

(e) Esophagus
  (1) Position
  (2) Stricture
  (3) Preventriculosis—Cardiospasm
  (4) Diverticulum
  (5) Foreign body

SLIDE NO. 6

  (f) Diaphragm.
  (1) Motility
  (2) Symmetry
  (3) Position
  (4) Change in position due to disease in
    (a) Chest
    (b) abdomen
  (5) Hernia

SLIDE NO. 7

(g) Pleura
  (1) Thickness
  (2) Presence of air
  (3) Presence of fluid
  (4) Chest wall

SLIDE NO. 8

(2) Combined X-ray and bronchoscope.
  (1) Pulmonography—oil—bismuth
  (2) Stricture of bronchus
  (3) Bronchiectasis
  (4) Abscess
  (5) Foreign bodies—non opaque

SLIDE NO. 9

(3) Combined X-ray and esophagoscope
  (1) Position of stricture
  (2) Length of stricture or atresia
    Retrograd esophagoscopy
  (3) Distending—locating diverticulae which will not fill of their own accord.

SLIDE NO. 10.

(4) Combined X-ray and pneumothorax-pleurography.
  (1) Pleural adhesions
  (2) Localization of small areas of fluid
  (3) Localization of bronchial fistula
  (4) Differentiation of interlobar abscess

SLIDE NO. 11.

(5) Bronchoscope.
  (1) Strictures
  (2) Foreign bodies
  (3) Abscesses
  (4) Bronchiectasis
  (5) Asthma of curative type
  (6) Atelectasis
  (7) Tuberculosis—thick caryna
  (8) Neoplastic
    (a) Polyp—primary—benign
    (b) Secondary—malignant
  (9) Securing tissue for necropsy.

SLIDE NO. 12.

(6) Pleuroscope.
  (1) Bronchial fistulous openings
  (2) Pleural abscess openings and drainage
  (3) Interlobar adhesions and abscess
  (4) Foreign bodies

SLIDE NO. 13.

(7) Esophagoscope.
  (1) Strictures
  (3) Foreign bodies—non opaque
  (3) Diverticulae
  (4) Ulcerations—neoplasms
  (5) Securing tissue for biopsy
  (6) Preventriculosis

President James: We have two other papers on the program, but since it is past the luncheon hour, I will ask if it is the pleasure of the Society to hear these papers now or carry them over to the next general session which will be tomorrow morning. Do I hear any comments?

The two papers were carried over. Adjourned.

SECOND GENERAL SESSION

TUESDAY, APRIL 16, 1929, 8:15 P. M.

The Medical Society of the State of North Carolina met in Court Room No. 1 of the Guilford County Court House with Dr. C. M. Van Poole, Chairman of the Committee on Obituaries, presiding.

Dr. Van Poole read his memorial address and a list of the names of the deceased members.

Dr. C. M. Van Poole, Chairman, (Salisbury): Mr. President: When the Great Shadow has fallen upon our cherished friends, and time has assuaged the first sharp pangs of grief, it is but human to seek to express the love and devotion that our hearts hold for the departed one's memory.

We are called upon on these occasions to speak of the virtues, goodness and ability of our departed comrades. Sometimes one is taken from us who has spent most of a useful life of many years in the furtherance of the cause of our noble profession. Sometimes we are called to mourn a man taken from us in the very beginning of his career, for, as has been said, "Death is a great commoner. It lays the heads of the great and powerful as low as the humblest."

When a man begins the practice of medicine and soon disappears we may attribute his non-success to circumstances; but when a man begins when young and retains the confidence of those whom he serves for a generation we must conclude that his success has been due to something more than chance or accident.

As you have already learned the roll of our departed friends for the past year is greater by ten than ever before in the history of the Medical Society of the State of North Carolina, numbering 54, averaging a fraction more than one death for every week in the entire year. Some, it is true, were retired and almost forgotten, while many were of middle age and of the most brilliant and cultured of the profession. The deeds of these noble men will not soon be forgotten. They will prove monuments to the fame of their memory more lasting than marble; for on the adamantine and invulnerable surface of their imperishable worth, unequaled merit, superb splendor and magnificent beauty, the corroding and devastating moth of decay will never fix a fang. These noble men were the very soul of honor, the embodiment of true worth. They had the courage of their convictions and were free and bold in the expression of their views and opinions, and yet, bold and aggressive as they were, their hearts were tender and sympathetic, and in all their dealings, both with the weak and defenseless as well as the strong, they were the very

personification of womanly tenderness and forbearance; seldom have they been surpassed in those gentle amenities which give such a charm to manhood and such a glorious light to true greatness.

These are some of the virtues which emblazoned the character of many of the departed heroes, and they will shine forever in that fadeless and imperishable coronet that will crown their lustrous brows. They are gone from us forever, but they have left behind them an example and an influence that will prove a blessing to the country and a benediction to the profession in common, for their radiant light will blaze for our guidance the glorious path of patriotic duty they so nobly trod, and encourage us to live like them who have gone to their God.

LIST OF NAMES OF DECEASED PHYSICIANS WHO DIED DURING THE PAST YEAR

Abernathy, Dr. J. F. ..... Murphy
Anderson, Dr. James R. ..... Morganton
Anderson, Dr. William ..... Beaver Dam
Anderson, Dr. J. H. ..... Tarboro
Boone, Dr. Edward L. ..... Rich Square
Boyett, Dr. J. M. ..... Southport
Braswell, Dr. James C. ..... Whitakers
Brawley, Dr. R. V. ..... Salisbury
Brittle, Dr. Paul C. ..... Burlington
Buchanan, Dr. Eli J. ..... Lexington
Bynum, Dr. C. M. ..... Marshville
Caldwell, Dr. John H. ..... Charlotte
Christian, Dr. T. D., Jr. ..... Greensboro
Coltrane, Dr. Wallace E. ..... Dunn
Cowan, Dr. Robert L. ..... Salisbury
Crisp, Dr. William B. ..... Roxboro
Dalton, Dr. D. N. ..... Wintson-Salem
Dillard, Dr. Richard E. ..... Edenton
Dunn, Dr. W. L. ..... Asheville
Farrar, Dr. M. Royal ..... Greensboro
Fearrington, Dr. J. P. ..... Winston-Salem
Garrett, Dr. F. J. ..... Rockingham
Hall, Dr. E. A. ..... Statesville
Halsey, Dr. Benjamine ..... Roper
Harding, Dr. Thomas R. ..... Yadkinville
Henderson, Dr. Benjamin E. ..... Fayetteville
Higgins, Dr. L. H. ..... Salisbury-Washington, D. C.
Hilliard, Dr. William D. ..... Asheville
Jones, Dr. John W. ..... Winston-Salem
Joyce, Dr. A. R. ..... Elkin
Klutz, Dr. Paul J. ..... Maiden
Lloyd, Dr. Perley J. ..... Washington
Long, Dr. W. T. ..... Roxboro
Malone, Dr. J. E. ..... Louisburg
Millis, Dr. A. T. ..... Guilford College
Minor, Dr. Charles L. ..... Asheville
Murphy, Dr. Walter C. ..... Burgaw
McDowell, Dr. James D. ..... York
McKenzie, Dr. W. W. ..... Salisbury

McNairy, Dr. C. Banks ..... Lenoir
McNeill, Dr. James W. ..... Fayetteville
McPherson, Dr. G. S. ..... Asheville
Packard, Dr. George H. ..... Meredith, N. H.
Person, Dr. J. R. ..... Pikeville
Smith, Dr. J. B. ..... Pilot Mountain
Sweaney, Dr. John ..... Durham
Tayloe, Dr. Joshua ..... Washington
Trantham, Dr. Henry T. ..... Salisbury
Walker, Dr. H. J. ..... Charlotte
Walker, Dr. L. A. ..... Burlington
Warren, Dr. Robert Lee ..... Dunn
Watkins, Dr. Conrad ..... Winston-Salem
White, Dr. Edmund T. ..... Oxford
Withers, Dr. James H. ..... Broadway
Witherspoon, Dr. B. J. ..... Charlotte
Wood, Dr. Edward Jenner ..... Wilmington

DR. JACOB FORNEY ABERNATHY

Dr. Jacob Forney Abernathy, born October 24, 1857, died Nov. 25, 1927. Educated in the public schools of Murphy and Hayesville. Graduated from Louisville Medical College 1884 and immediately began practice at Murphy, North Carolina, where he lived until the time of his death. He had been a member of the town council and county physician. He was connected with several business enterprises in the town of Murphy. He married Victoria Henderson Murphy and had five children.

DR. JAMES ROBERT ANDERSON

Dr. James R. Anderson, 67 years of age, died at his home in Morganton, December 12, 1928. Dr. Anderson was a son of the late Rev. and Mrs. Robert Burton Anderson. He is survived by his widow, four sons and three daughters.

DR. J. H. ANDERSON, Tarboro, N. C.

Died at his home January 18th, age 81. He kept up his professional work until a short time before his death. He is survived by his wife and four daughters and seven sons. He was an outstanding citizen of his community.

DR. WILLIAM ANDERSON

In the death of Dr. William Anderson of Beaver Dam, Watauga County, another of the old-time mountain physicians has passed. Dr. Anderson had practiced medicine in his community more than a half century. He was 88 years of age at the time of his death. He began his practice at a time when calling on patients meant long horseback rides and often tramps afoot over rough mountain trails, sometimes covered with snow and ice. Dr. Anderson was a native of Wilkes County, but came to Watauga in his early manhood, and began the practice of medicine. For

48 years he was a member of the Elk Park Baptist Church. He was always interested in the welfare and uplift of the community in which he lived.

DR. EDWARD L. BOONE, Rich Square, N. C.

No data.

DR. JAMES M. BOYETTE

James M. Boyette, D.D. and M.D., 71 years of age, died at his home in Southport, November 6, 1928. Dr. Boyette was a native of Warsaw, but during the time of his professional life, he had practiced medicine at Asheboro and Wadesboro. He was interested in all local movements of importance and was respected and honored in the community in which he lived. He was a consistent member of the Episcopal Church.

DR. JAMES CORNELIUS BRASWELL

Dr. J. C. Braswell, 70 years of age, pioneer physician, prominent citizen and fraternal leader, of Whitakers, N. C., died at Johns Hopkins Hospital, Baltimore, April 7, 1929.

Dr. Braswell was a physician of repute and was much liked in his community. He represented Nash County several times in the General Assembly and was unusually prominent in Masonic circles. He was educated at Emory and Henry College and at the Baltimore Medical College. He had been a member of the General Assembly and was at the time of his death a member of the board of directors of the North Carolina Sanatorium for the treatment of tuberculosis.

DR. ROBERT VANCE BRAWLEY

Dr. R. V. Brawley, 50 years of age, died at his home in Salisbury, N. C., on January 5, 1929, following a short illness of one week. Dr. Brawley attended the Mooresville High School and resided in Mooresville during adolescence, and he then attended both the academic and medical departments of the University of North Carolina, and later received his medical degree from the University College of Medicine, Richmond, Va. He located in Salisbury 26 years ago, confining his work to his chosen specialty, eye, ear, nose and throat. His kindly personal interest in the welfare of his patient was responsible for his ability for making friends and holding them.

Dr. Brawley was a native of Shepherds Crossroads. He was licensed at the age of 23 to practice medicine in his native state. After preparing himself both in Richmond and New York for the specialty of ophthalmology and otolaryngology he located in Salisbury. By constant and diligent attention to his patients he gradually built up a large practice, drawing his clientele not only from Rowan County but from many distant areas. He was a leader; always willing to do more than his share of any undertaking that he felt worthwhile.

Dr. Brawley was honored and appreciated as well as loved not only by the hundreds of devoted patients to whom during his life of usefulness he ministered but so highly thought of was he by his professional friends that he was the recipient of the highest honors that could be accorded him by his medical colleagues. He was a regular attendant to the meetings of the medical associations of which he was a member. He was a member of the Rowan County Medical, North Carolina Medical Association, the American Medical Association, and the American Academy of Ophthalmology and Otolaryngology.

Dr. Brawley was a member of St. Luke's Protestant Episcopal church and was considered one of the most valued members of the vestry. He was unexcelled in cordiality and his genial disposition will be long remembered.

Surely Van Dyke must have had a character such as Dr. Robert Brawley's in mind when he wrote the following:

"He has achieved success who has lived well, laughed often and loved much; who has gained the respect of intelligent men and the love of little children; who has filled his niche and accomplished his task; who has left the world better than he found it, whether by an improved poppy, a perfect poem, or a rescued soul; who has never lacked appreciation of earth's beauty, or failed to express it; who has always looked for the best in others and given the best he had; whose life was an inspiration; whose memory a benediction."

J. E. Stokes, M.D.,
E. B. Clement, M.D.,
R. M. West, M.D.

A Medical Prophet

(Editorial for Greensboro *Daily News*.)

"Dr. Robert Vance Brawley, Salisbury specialist, who died Saturday evening, was one of those pioneers in prophylaxis whose sacrificial labors were always giving the state a new birth and a new salvation.

"To be sure, he was not old enough to be listed among the scientists who first put forward the opinion that much of inefficiency and failure, not to mention worse, could be traced to diseases of the eye, ear and throat. But he must have been one of the earliest to welcome the state's incursion into his own field, being prophet enough to see that not in the time of his own children, or his children's children, would the commonwealth skim the surface of the public need. For Dr. Brawley never forgot that the purpose of medical science is to minister; not to be ministered to. Consequently, every clinic conducted by the state was welcomed by him; every interest of North Carolina in the medical treatment of its citizens received his encouragement, although the course pursued smacked strongly of a communistic endeavor.

It is interesting to observe the effect of this professional hospitality upon his own fortunes. If his career had the tendency toward socializing medical science, it had a much finer direction in spreading by a sort of social contagion a noble example which he unconsciously set the public. The chroniclers of his death observe the flocking of the public to his offices, the call to the presidency of bank and manufactory, the steady demand of a community upon the services of this incredibly busy man, who, because he was always about the work of a great citizen, always had time to give. In the end pneumonia found him with a heart used up; but no man of his time in North Carolina had given more of it to the public in whose name he always labored. And at the close of a life into which he had crowded the activities of two men, Dr. Brawley is revealed as one of the wealthiest men of his city, the builder of his own fortune.

"The death of Dr. Brawley, therefore, removes more than a shining personality in a community; in a larger sense his is the passing of an institution. Greensboro and all other cities of the state, we are sure, can appraise properly such a life and sympathize with Salisbury in such a loss."

DR. PAUL C. BRITTLE

At the age of 49 years, Dr. Paul C. Brittle, one of the leading professional men of his community, died at Burlington, January 29, 1929. The deceased graduated from the State College, also Wake Forest, and the Medical Department of the University of Virginia. He practiced a number of years in the eastern part of the state before locating in Burlington. He was a Mason, honored by his fraternity brothers and was prominent in the local Medical Society. He was a consistent member of the Baptist Church, was much interested in the schools of the community and also in local health work.

DR. ELI J. BUCHANAN

Dr. E. J. Buchanan, physician, banker and manufacturer of Lexington, N. C., died August 31, 1928, at the age of 63. Dr. Buchanan was a native of Rowan County and was educated at N. C. College, the University of Virginia and the University of Maryland, and began the practice of medicine at Lexington in 1893. He was not only a leading physician but was much interested in the welfare of his community, especially that of education, having served a quarter of a century on the city school board. Dr. Buchanan married Miss Mary Reid of Concord who survives him with four daughters.

DR. C. M. BYNUM

Dr. C. M. Bynum of Marshville, N. C., died in a hospital at Monroe December 18, 1928.

Dr. Bynum was 36 years of age and had practiced medicine at Marshville since his graduation at a medical college in Richmond, Va. He was well liked by his associates and popular in the town of his choice.

DR. JOSEPH HENDERSON CALDWELL

By Dr. John Hill Tucker
Charlotte, N. C.

It is not always easy to understand or accept the inscrutable ways of an all-wise Creator. Especially is this true as we stand by the open grave of a young man who has been called in the full tide of his usefulness. Such seems to be the case of our recently departed friend and brother physician, Joseph Henderson Caldwell. Born March 6, 1890, Winnsboro, S. C. Graduated, N. C. Medical College, 1914. He made the highest average of any member of his class. Married Miss Grace Miller, of Clemmons, N. C., in 1913.

He was among the first American doctors to reach France with the A. E. F., as First Lieutenant, Fifth Field Artillery, First Division. Served throughout the war in army of occupation. Was gassed twice.

Died August 17, 1928. He is survived by his wife, Grace Miller Caldwell, and two children, James and Marion.

After returning from France he was for the remaining part of his life connected with the Nalle Clinic of Charlotte. Although his life was a comparatively short one he made a marked impress on the community in which he lived. Always a man of honor, justice and sympathy in his every professional relationship, both with his brother physicians and his patients. The last six years of his life he was a great sufferer and through his own suffering he learned to comfort others, as only those who are acquainted with pain and disappointment can. Our profession, in his death, lost a great physician, the community, a good citizen, and his loved ones a most affectionate and tender father and husband.

DR. THOMAS DAVIS CHRISTIAN, JR., Greensboro, N. C.

Dr. Thomas Davis Christian, Jr., died at his home in Greensboro, N. C., January 12, 1929, age 32 years. Dr. Christian was educated at Randolph-Macon College, Ashland, Va., and after graduating from this institution he took the medical course at Harvard Medical School. He was a member later of the staff of the Boston City Hospital and of the Peter Bent Brigham Hospital of Boston. At the latter institution he was associated with his uncle, Dr. Henry A. Christian.

Dr. Christian came to Greensboro, N. C., to begin practice in the fall of 1926 and rapidly made a name for himself in the medical profession. He had given unusual promise and was highly esteemed, both for his work as a physician and for his personal qualities.

DR. WALLACE E. COLTRANE

Dr. W. E. Coltrane, aged 40 years, died at a hospital in Smithfield, June 2, 1928. Dr. Coltrane had practiced medicine at Dunn, N. C., for 15 years and was well and favorably known. He was a specialist by profession, was a member of the Methodist Church, and a Mason.

DR. ROBERT LEE WARREN

Dr. G. L. Sikes (Salemburg): Dr. Robert Lee Warren was a brilliant young man. He died last spring. Dr. Coltrane died first, and then Dr. Warren. I practiced in Sampson County adjoining their practice, and while I did not often meet these two gentlemen in consultation, I should not like this opportunity to pass without saying something about these two noble young men.

These two young men were well loved. Theirs was only a short life in the service, but I think for our benefit a few words of eulogy are due them from someone. I once attended the funeral of a friend of mine, a merchant who served people faithfully and long and who was well thought of by everybody that I ever heard speak of him. When the minister came to preach the funeral sermon he read the Scripture and turned and looked the congregation over for a minute in a way that placed emphasis on what he was going to say. Then he said:

"Friends of this man over whose remains we are holding this funeral service today, who has lived in the lives of you people and whom you knew and whom I have known, what I shall say today is just a few words. When a man has lived in your midst and in your hearts, if he needs eulogy he does not deserve it; if he deserves it he does not need it." The more I have thought of that sentence the more weight it seems to carry.

That was the minister's eulogy on that great life, and it is mine in speaking of these two young men. In passing through their territory and working with their people I find that the eulogy is still in the hearts and the lives of the people whom these young men served, and it bubbles up as freely and as sparkling as do the waters of the sparkling Silver Springs of Florida. It comes free and easy, and they love to eulogize the lives of these two noble young men who gave their lives for the benefit of the people they served. They gave their services freely and willingly and gladly, almost to the time of their death. They were two noble men who have passed from our midst, and our profession has sustained a loss in their death.

DR. ROBERT LOCKE COWAN

R. L. Cowan, M.D., a retired physician and member of one of the oldest families of Rowan County, died at the home of his daughter, Mrs. T. J. Anderson in Salisbury on September 26, 1928. Some years ago Dr. Cowan was one of the active practitioners of medicine but for some time he had retired from active work.

DR. WILLIAM D. CRISP, Roxboro, N. C.

Dr. Crisp died suddenly in bed after a hard day of professional work January 11, 1929.

DR. DAVID N. DALTON

Dr. David N. Dalton, age 60 died at his home in Winston-Salem, N. C., September 4, 1928. Dr. Dalton was born in Stokes County, but resided in Winston-Salem many years. He had practiced medicine for more than forty years. He was married 38 years ago and his widow and three children survive him.

DR. RICHARD DILLARD

Dr. Richard Dillard, age 71, a retired physician, historian and magazine writer, died at his home in Edenton, N. C., May 15, 1928.

Dr. Dillard was educated at the University of North Carolina and took his medical course at the University of Virginia. He was looked upon as one of the most picturesque men of eastern North Carolina during his long service as a physician and historian.

DR. WILLIAM LEROY DUNN

Dr. W. L. Dunn of Asheville, N. C., died at the United States Veterans Diagnostic Hospital, Washington, D. C., May 14, 1928.

Dr. Dunn was graduated in medicine from the medical department of the University of Michigan in 1891 and located at Asheville, N. C., in 1900.

Dr. Dunn was well known throughout the United States and Europe for his research work in the chemistry of tuberculosis.

During the World War Dr. Dunn held a commission as Lieutenant Colonel in the Medical Corps. No one contributed more to the medical service of the bureau than Dr. Dunn.

At the time of his death, Dr. Dunn was president of the American Climatological and Chemical Association. He was justly considered one of the leading authorities on tuberculosis in the world. He was also Second Vice-President of the Southern Medical Association and First Vice-President of this Society at the time of his passing.

DR. W. L. DUNN

By The Buncombe County Medical Society

WHEREAS in His infinite wisdom, Almighty God has seen fit to remove from out midst our dearly beloved confrere, Doctor William L. Dunn, and

WHEREAS for the past thirty years Doctor Dunn has practiced medicine in the City of Asheville, has always enjoyed the confidence, esteem and good will of the citizens of Asheville, and

WHEREAS Doctor Dunn's ability as a medical man was such as to bring him not only local and state recognition in the medical profession but has been recognized throughout the length and breadth of the land, and

WHEREAS Doctor Dunn by his untiring energy and love for his profession has always stood ready in the Buncombe County Medical Society to do anything and everything he could for the benefit of the Society, for the City of Asheville, for the County of Buncombe, and the State at large, and

WHEREAS Doctor Dunn at the beginning of the World War, at great personal sacrifice to himself, volunteered for service with our army forces in Italy where he was in command of our medical unit as Colonel, returned home with honors and continued active in the Medical Reserve Corps of the Army up to the time of his death, now therefore be it

RESOLVED That the Buncombe County Medical Society, assembled in memorial meeting on May 28, 1928, regarding the death of our confrere, Doctor William L. Dunn, does hereby deeply deplore his untimely death; and be it further

RESOLVED That recognizing his sterling qualities as a practitioner and as a diagnostician, we feel that in his death one of the most able men of our Society has been taken away from us; and be it further

RESOLVED That while we bow in humble submission to the will of Almighty God, we can but pass these resolutions, spread them on the minute book of our Society, and send a copy of the same to the bereaved family and to the local press, realizing and recognizing that the whole community mourns with us.

The Resolution Committee,

C. P. Ambler, Chairman,
Charles L. Minor,
Joseph B. Greene,
C. D. W. Colby,
W. P. Herbert.

DR. WILLIAM LeROY DUNN, Vice-President

In Memoriam

(From Official Publication of the Southern Medical Association)

The Southern Medical Association is fortunate in never having lost by death a president in office; and until quite recently no vice-president has ever died in office. However, on May 24, 1928, the Association suffered a severe blow in the death of its Second Vice-President, Dr. William LeRoy Dunn, of Asheville, North Carolina.

Dr. Dunn was born in Fairfield, Ohio, in 1871 and later moved to Decatur, Ohio, where he was graduated from high school with the record of having been the youngest student ever to have completed the course of study.

His college work was done at the University of Michigan, where in 1889 he took the degree of Pharmaceutical Chemist; Doctor of Medicine in 1891; Bachelor of Science in 1894; and in 1916 his Alma Mater con-

ferred an honorary Master of Arts upon him in recognition of his splendid work in the study of tuberculosis. It is of interest to note that Dr. Dunn was graduated in medicine at the age of twenty and had to wait a year before he could secure his license to practice.

In 1894, Dr. Dunn came to Asheville and lived to become one of the national authorities in the diagnosis and treatment of tuberculosis. On reaching Asheville he was privileged to work at Winyah Sanatorium with the distinguished Swiss physician, Dr. Arnold C. Klebs, whose name is linked with that of Loeffler in connection with the discovery of the diphtheria bacillus.

An internist in Asheville, Dr. Dunn naturally became deeply interested in the study of tuberculosis clinically as well as chemically, and contributed various important papers on the subject.

During the World War he was commissioned Major, later was made Lieutenant-Colonel and after the War was made Colonel in the Reserve Corps. He was also appointed Colonel by the Italian Army and held a commission as Colonel on the staff of the Governor of Kentucky. Dr. Dunn saw service in Italy as Chief of the Medical Service of Base Hospital No. 102, at Vicinza. However, he was made American Consultant of the Expeditionary Forces in Italy and traveled extensively over Italy in that capacity.

Dr. Dunn was a Vice-President of the North Carolina State Medical Association; a member of State, National, International Tuberculosis Associations; was only recently elected President of the American Climatological and Clinical Association; and at the Memphis meeting of the Southern Medical Association was elected Second Vice-President.

By the irony of fate Dr. Dunn died of carcinoma of the lung, after he had had X-ray pictures made in his own office and diagnosed them himself. An X-ray man was called in to see the films without knowing whose chest they represented and confirmed the diagnosis.

The American Legion was ever near to the heart of Dr. Dunn, who is said to have spent large sums annually in the work of that organization and disabled veterans.

Dr. Dunn was a member of the Phi Delta Theta fraternity in college; later he became a Thirty-Second Degree Mason; while in religion he was a member of the Presbyterian Church.

At his own request his body was wrapped in an American flag and he received a military burial conducted by the American Legion.

Dr. Dunn was a man who by ability and training could have graced a university chair with distinction; and one regrets that students could not have come within the circle of his influence.

The South and the Nation have lost a brave, honest man, a profound student and a brilliant clinician; while the Southern Medical Association has suffered the loss of a Vice-President who was one of its outstanding members.

DR. LeROY DUNN, A.B., M.A., M.D.

By J. W. Dickie, M.D., Southern Pines

At the suggestion of Dr. L. B. McBrayer and through the courtesy of the Committee on Obituaries, it is my pleasure and privilege to pay humble tribute to that illustrious physician and noble character, the late Dr. William LeRoy Dunn.

It was my good fortune to be associated in practice with him in the years 1920-21,—years immediately following the World War in which both of us had participated; years when he was approaching the zenith of professional attainment, following an experience abroad which had broadened his vision and inspired him to even greater heights.

Dr. Dunn will go down in history as a specialist in tuberculosis and, with all respect to specialists in that field whom I have known, his knowledge and his practice make him stand out preeminently.

Comparatively few people knew of his high and varied scholastic attainments: in the literary field he held a Bachelor of Science and Master of Arts degree; he was a graduate in pharmacy and a graduate in medicine, to be sure. For several years he was assistant to one of the outstanding surgeons of his day. He studied for two years in Germany, at a time when only the chosen few were so privileged. He was the highest authority in the world on the chemistry of the tubercle bacilli and because of his ability in biochemistry Professor Klebs sought his services in the manufacture of antiphthisin in the Winyah Sanatorium laboratory in Asheville. Because of his connection with the Winyah Sanatorium many gained the impression that he must have had tuberculosis. This caused him no little embarrassment as he did not have it.

With such a background in the knowledge and practice of his profession, success was assured in any field given health and one other indispensible asset—personality. The latter Dr. Dunn possessed in great abundance, as all of his associates and thousands of his patients will testify. This striking quality is worthy of special mention for it was the outstanding characteristic of the man and made to a great extent for the phenomenal success of his practice. It was the quality which gave patients their unbounded confidence in him and his opinion. He was their morning tonic. He made a tortuous journey smooth and safe. Finally, he was their inspiration and comfort even in the face of defeat.

At the risk of appearing hopelessly biased, I venture to assert that Dr. Dunn cured more people of tuberculosis than any one man of his or any other time. This was due to the great volume of his work and because of his conservative and effective method of treatment—method that was regarded lightly perhaps, at one time, but is more and more coming to be recognized as *the method* par excellence. Incidentally, a method which revolutionized treatment in all Veterans' Hospitals, to the great benefit of the veterans and to the credit of the Bureau.

William Leroy Dunn, M.D.

Could such a man made machine be a great humanitarian? Emphatically, yes. In the thirty-odd years he practiced in Asheville, no human being with tuberculosis, white or black, ever wanted for medical care if his services were desired. Those of limited means were as welcome and received quite as much attention as the Wall Street broker. Contrary to the usual practice, the Wall Street broker was not charged an extra fee to make up for it.

Dr. Dunn was also human—which is another way of saying he erred. He never learned to play—yes, his work was his play, but even he was forced him in the end to pay the penalty of all work and no play. All work and no play explains why his admirers so far outnumbered his intimates. Phenomenal success always excites envy and that, too, explains in a measure why he was sometimes thought to be hard and taciturn. But to those who knew,—a warm, throbbing heart beat underneath his firm exterior.

Success is its own reward for those who are not vain. He was not always politic, therefore, he never attained the recognition in this and some other Medical Societies to which his ability and attainments entitled him—to the great loss of the Societies, rather than to him. He did attain success in the esteem of his colleagues and associates and the love and affection of the thousands to whom he ministered.

In his death this Society lost one of its strongest members. I, personally, lost an ever ready and effective counselor and friend. And, in the years which a Divine Providence may yet allot to me, I shall in all humility attempt, in token of my love and devotion for him, to follow, though it be afar, in the path of this illustrious physician, my friend, William LeRoy Dunn.

DR. WILLIAM LeROY DUNN

Dr. William LeRoy Dunn, prominent Asheville physician, died in Washington Thursday morning, May 24, 1928, at Mount Alto Veterans Bureau Hospital. Funeral services were held at the First Presbyterian Church in Asheville on May 26th, he being given a military funeral in accordance with his own personal wishes.

Dr. Dunn was a member of the American Medical Association, the Medical Society of North Carolina, of which he was a vice-president, the Southern Medical Association, the state, national and international tuberculosis associations, and a member of the executive committee of the National and State Tuberculosis Associations.

During the World War he held the commission of Colonel in the Italian Army in appreciation of services he rendered as chief of the medical service at Base Hospital 102 in Italy. For eight months in Italy, he acted as military ambassador between American and Italian forces. He was also a colonel in the United States Reserve Corps.

Dr. Dunn was born at Fairfield, Ohio, in 1871, coming to Asheville in 1894, where he was associated with Dr. Von Ruck and Ambler in the

old Winyah Sanitarium. He received his medical degree at Ann Arbor when only twenty years of age and was compelled to wait a year before he could practice medicine. In 1916 his Alma Mater awarded him the degree of master of arts in recognition of his work in the field of tuberculosis.

He was married in 1900 to Miss Myrtle Mansfield of Kentucky; two sons were born of this union, William LeRoy, Jr., and Thomas Mansfield, both of whom were with him at the time of his death. In 1922 Dr. Dunn and his first wife were divorced and he later married Miss Marion Littleford. Two grandchildren, Marjorie Ann and Barbara Jane, also survive him.

In 1894 when Doctor Dunn accepted the position at the old Winyah Sanitarium, Dr. Klebs, an outstanding authority and one of the two men who are accredited with discovering the diphtheria bacillus, had charge of the Winyah laboratory. For several years Dr. Dunn was associated with Dr. Klebs in this laboratory work. He was particularly interested in the chemistry of tuberculosis and this won for him national recognition. It was during his association with the Winyah Sanitarium that the discovery of the watery extracts of the tuberculosis bacillus was made.

He studied for several years in important medical centers of Europe, including Berlin, Leipzig, and Paris.

Dr. Dunn died of cancer of the lung, having made the diagnosis from X-ray which he took of himself.

Dr. Dunn served as a member of the first Asheville board of health and continued in that body for a number of years. The city did not have adequate laboratory facilities; but Dr. Dunn at that time had the most thoroughly equipped laboratory in the western part of North Carolina and this laboratory was always open to the city board of health and to any physician of the vicinity. Working with the committee from the Buncombe County Medical Society, he was largely instrumental in bringing about the establishment of meat and milk inspection in Asheville and was also a member of the committee from the Buncombe County Medical Society when the pioneer work on the investigation and eradication of flies was made. The work as carried out by his committee has been recognized throughout the civilized world and the legislation which was adopted in Asheville at that time is now standard legislation everywhere. Dr. Dunn served on the staff of many hospitals in his lifetime; was at one time dean of the Mission Hospital in Asheville and at his death was a member of the staff at Biltmore Hospital.

He was a thirty-second degree Mason and a Knight of Pythias, as well as a member of Phi Delta Theta social fraternity. Was also a member of Pen and Plate Club of Asheville and of the Asheville and Biltmore Forest Country Clubs.

Dr. Dunn was a devoted friend to the disabled veterans and each year when various bills came before Congress, he appeared at the committee meetings and gave testimony. His work of standardizing the treatment of

tuberculosis was recognized by the government authorities. He labored diligently for the construction of permanent units at Oteen Hospital and it was said that it was largely through his efforts that Congress appropriated money for this work, a part of which has been completed and part of which is now in course of construction.

Dr. Dunn was always interested in any movement which would benefit Asheville, Buncombe, the State of North Carolina, or the country at large. He had but few hobbies outside of his medical profession but devoted himself closely to his work. He enjoyed the confidence and esteem of everyone in Asheville. His reputation in tuberculosis work was not only statewide but was recognized internationally. He was one of the outstanding members in his county and state societies and the resolutions which they have adopted since his passing indicate that they recognized him as having been one of the greatest, if not the greatest, member of the society. Dr. Dunn was a man of loyal character and one of high ideals and sterling worth. He was ready at all times to go out of his way to give encouragement and assistance to the younger men of his profession. Dr. Dunn was one of the most willing and trusted advisers on state and county health problems and was recognized as such not only locally but nationally. At the time of his death, he was president of the American Climatological Society, the most exclusive medical society of the United States.

C. P. Ambler.

DR. WILLIAM L. DUNN

(Editorial, Asheville *Citizen*)

There is no way in which the loss to Asheville and humanity caused by the death of Dr. William L. Dunn can be measured. He has been cut down swiftly in the full noontide of a career which has long been of surpassing usefulness and which, his powers ripened and matured, was steadily winning wider and wider recognition.

The place which Dr. Dunn had made for himself in this community and in the medical profession had been earned by his unflagging industry and by a spirit of service which made him unsparing of himself as well as by his great natural talents. His reputation as an authority on tuberculosis and as one of the foremost diagnosticians of the country was nationwide. Here in his adopted home in which he became so important a factor he will be remembered as well for the public spirit which in the World War and afterwards he showed so conspicuously in the service which he rendered on behalf of those who fell victims to disease while answering their country's call.

Dr. Dunn was a citizen who took his citizenship seriously and respected its obligations. He will be missed as a citizen hardly less than as a great physician.

DR. W. L. DUNN

(Resolutions in regard to the passing of Dr. W. L. Dunn by the National Tuberculosis Association.)

WHEREAS, William LeRoy Dunn of Asheville, North Carolina, who was a member of the Board of Directors of this Association from 1919 to 1924 and was a member of the Executive Committee from 1920 to 1924, has passed away in Washington, D. C., and

WHEREAS, Doctor Dunn was a regular attendant at all the annual meetings of this association, contributing largely to our journals and meetings and aiding the progress of anti-tuberculosis work in his State.

BE IT HEREBY RESOLVED, that this Association records its sense of deep loss and extends its sympathy to his family in their bereavement.

DR. W. L. DUNN

(From *The Journal of Outdoor Life,* October, 1928, published by the National Tuberculosis Association)

(The following tribute to Dr. Dunn is by a layman and ordinarily would not seem to be in place in our records, however, it shows the side of Dr. Dunn's life that is not often mentioned in the obituary notices, and in this day is too often forgotten by patients, hence, its appearance here. Secretary.)

He's Gone!

By Frances Dukes Wynne, Miami, Florida

(Editorial Note—So many of our readers have known personally or by reputation Dr. William LeRoy Dunn, who died May 24, 1928, that the following tribute by one of his many loving patients will be read with sympathetic interest. Dr. Dunn, as a tuberculosis specialist in Asheville, N. C., gained wide recognition through his contributions to the tuberculosis movement. He served as director of the National Tuberculosis Association from 1919 to 1927, and for three years was a member of the executive committee.)

He's gone! Nevermore will his quiet presence bring hope and faith to a despairing heart. But his memory will never fade in the hearts of those who knew him best.

Great doctors and scientists have given their words of praise to him and to his wonderful work. They have expressed heartfelt sympathy for his loved ones and his brave colleagues in Asheville, N. C. They have tried to tell what he meant to medicine, tuberculosis and the world. But they could not know many of his greatest attributes. Only very great trouble or very close, intimate association with him made him so far forget his iron self-control as to let this softer and more tender side of his nature be revealed. I feel blest that I was one of the few admitted beneath that outer crust. And when you saw beneath it, what a man, what a heart, what a soul was there!

In the death of Dr. W. L. Dunn, of Asheville, N. C., medicine lost a great explorer and worker, hundreds of patients lost the one person who, they felt, could lead them out of the valley of illness and despair to the mountain top of health and joy, and one little woman, the mother

of two of his child patients, lost the most sympathetic, capable "doctor-father" in the world. That woman is myself.

When he put my five-year old boy to bed three years ago with tuberculosis, I made my first acquaintance with him. He found my son very ill at the time and told me in a general way what was before me.

My little boy had to go to a sanatorium and he said, "You expect to stay with him, don't you?"

"Yes, of course," I replied.

"Because," said he, "I would not keep him here without you. That would be saving his body at the expense of his soul. We would rather lose his body and save his soul."

Needless to say, I loved Dr. Dunn from that day on.

Later he found that my little girl of eight also had tuberculosis. There were both my children in the sanatorium. In another month my husband was in the third bed on that porch of the sanatorium—all three tuberculosis patients. I was nursing them all and although I looked the picture of health I went down to Dr. Dunn for an examination. He jokingly, yet half earnestly, said, "I won't examine you. Get out of my office."

"Not until you give me a thorough examination," I retorted.

"Well," he said, "if you insist on it I'll have to do it, but I'd rather be shot, because I'll have to put you to bed if I find the least indication, under the circumstances. And I can't put the four of you to bed."

He made my examination as rigid as he knew how—one test after another, with no reaction till after the third one. Then followed a very slight reaction. I reported to him for the final verdict. He looked at the test and told me to return the next day. I did. He told me the same thing again. After the third trip to his office to hear my verdict, he sent me away from him saying that he would let me know in a few days. I waited nearly two weeks. Not a word from Dr. Dunn as to whether I had to take the cure or not. Then one day at the sanatorium I saw him. I ran across the lawn and cornered him.

"I'm tired of waiting," I said. "I want this thing settled one way or the other, and I don't much care which."

And he looked me straight in the eyes and said, in that beloved soft drawl of his: "Dog-gone you, I do, too. I haven't been able to sleep for two weeks worrying about having to put you to bed too. And last night I dreamed about it."

His eyes filled with tears and he said, "I guess you had better go to bed, too."

I won't say what my eyes did—or my whole face for that matter. A man with a heart like that—all torn up because he had to put the fourth and last member of a family to bed with tuberculosis. I have told this to numbers of people who thought they knew him and they would not believe me. They said he was too hard and indifferent for that. How little they really knew him! They saw only that protective crust in which

he encased himself in order to keep these tender feelings from getting the upper hand of his better judgment.

So many times since his death have I asked myself why he should be taken. He was so indispensable to humanity so needed in the fight against tuberculosis. Then the other night I had a dream that seemed to answer my questions. It may answer them for you. This is the dream.

Someone knocked at my door. I was busy inside so I simply called out, "Come in."

The door opened and in walked Dr. Dunn. I rushed to him and threw my arms about him in gladness at his return. He gently patted my shoulder in that soothing way of his that is reserved for those who have more sorrow than they seem able to bear. At once peace came upon me. But I was puzzled and said, "Why are you here? I have read all those notices in the papers about your death. How can you be here?"

He answered, "I am here all right. But speak low. No one knows that I am alive but Mrs. Dunn and you."

"But Dr.——, and the others in your office," I replied. "They all think that you are dead. They are all grieving so for you."

"Yes," he sadly replied, "I know. It hurts me to do it. I hate to deceive them like this. And it puts so much more work on them. I am sorry. But this is the only way I could get a rest. I was utterly broken down, but I could not refuse to go to patients who needed me, even though I was sick myself. So I just came away incognito."

And he looked so tired and worn and ill that my heart hurt me for having reproached him.

"I must be going now. Come outside on the porch and I will show you how I look as I go."

I went with him to the door. He put on a ragged overcoat, a shapeless felt hat, some dark glasses and took up a knotted cane that was leaning against the door. Without another word he shambled out of my house and on up the street—an utter stranger and a waif.

The only way he could rest! How true! He gave his life for humanity as surely as the Master on Calvary.

DR. SAMUEL B. ELLINGTON

Dr. S. B. Ellington, age 76, of Rockingham County, died at Winston-Salem, N. C., August 3, 1928.

Dr. Ellington was at one time county physician for Rockingham County.

DR. M. ROYAL FARRAR

Dr. M. R. Farrar, of Greensboro, N. C., age 58, died in Charlotte, N. C., March 30, 1929.

Dr. Farrar was a man of education and refinement. He was at one time associated with the late Dr. J. W. Long. He held a high position in

the Masonic order and displayed a knowledge of classics that marked him as a man of superior judgment and education. He had not practiced his profession for some months prior to his death.

During the World War Dr. Farrar served as captain in the medical corps with the 59th Pioneer infantry and was awarded the Croix de Guerre by the French government. At the cessation of hostilities he was stationed at Fox Hills hospital, New York, N. Y., and was later transferred to Oteen Hospital, Asheville, N. C.

DR. J. P. FEARINGTON, Winston-Salem

No data.

DR. F. J. GARRETT

Dr. F. J. Garrett, age 64, of Rockingham, N. C., died in Johns Hopkins Hospital, Baltimore, Md., December 22, 1928, where he had gone for operation, later developing pneumonia which was the immediate cause of his death.

Dr. Garrett graduated in medicine from the University of Maryland and had practiced his profession for 43 years, the last 15 years being devoted to specialization in the eye, nose and throat with yearly post graduate work at the New York clinics. He began his work at Ellerbe, N. C., moving shortly afterwards to Rockingham, where he enjoyed a large and successful practice.

DR. E. A. HALL

Dr. E. A. Hall, age 88, died at his home near Statesville, N. C., June 3, 1928.

Dr. Hall was the physician for his community from 1868, when he graduated in medicine from the University of Maryland, until incapacitated a few years ago by age. He died on the plantation on which he was born. The old homestead was granted to his great grandfather, James Hall, an immigrant from Pennsylvania, by the Earl of Granville and since that time the home place had not been out of the possession of the family.

Dr. Hall was a fearless and valiant Confederate soldier. He was an elder in the Presbyterian Church for many years. He was the father of the distinguished Dr. James K. Hall of Richmond, Va.

DR. BENJAMIN F. HALSEY

Dr. Benjamin F. Halsey died at his home at Roper, N. C., February, 1929.

Dr. Halsey was graduated from Vanderbilt University in 1893. He was licensed by the State Board of Examiners in 1894.

Dr. Halsey was a firm believer in organized medicine and attended regularly the session of our Society until illness made it impossible, and was an Honorary Fellow. He had served as alderman and mayor of his town and in one session of the General Assembly.

DR. THOMAS R. HARDING

Dr. Thomas R. Harding, age 73, prominent and beloved physician, died at his home at Yadkinville, N. C., February 6, 1929.

Dr. Harding was graduated from the Baltimore College of Physicians and Surgeons in 1889, and had kept abreast of the times by taking post-graduate work from year to year and attending lectures repeatedly. He had served his county as health physician and as its representative in the State legislature. He was a member of the Yadkinville Methodist Church and was a Mason.

DR. BENJAMIN E. HENDERSON, Fayetteville, N. C.

No data.

DR. L. M. HIGGINS, Salisbury, N. C.

Dr. Leight Monroe Higgins was born in Kentucky, March 14, 1894, and died in Washington, D. C., April 7, 1928.

Dr. Higgins was educated at the University of Ohio and graduated in medicine from the Johns Hopkins Medical School in 1920. He located in Salisbury in 1923 and associated himself with Drs. Brawley and Brawley in the treatment of eye, ear, nose and throat diseases, where he was eminently successful.

DR. LEIGHT MONROE HIGGINS

By J. G. Busby, M.D.

The medical profession has produced many noble heroes, who are content to live simple, unassuming lives, giving their best day by day in the service of others.

Standing out preeminently among this number was Dr. Leight Monroe Higgins. Born in Louisville, Ky., March 14, 1894, his mother, a Southern woman, his father a native of Ohio, Dr. Higgins spent the first five years of his life in that city, where his father was engaged in the practice of medicine. In 1899 he moved with his parents to Athens, Ohio, the parental home of his father. He entered the public schools of that city in 1900, graduating from the high school in 1912. In the fall of the same year he entered the freshman class at Ohio University, from which University he graduated in 1916, with the degree of A.B. He was a member of Phi Delta Theta fraternity, in which organization he took an active and continued interest. In September, 1916, he entered the Johns Hopkins Medical School, Baltimore, graduating from this institution in 1920 with the degree of M.D. Immediately upon graduation he entered the hospital as interne, directing his service entirely to the specialty of ear, nose and throat. After a hospital service of three years, during which he showed marked proficiency, Dr. Higgins located in Salisbury, associating himself with Drs. Brawley and Brawley. This association, always pleasant and characterized by many happy experiences, continued until the fall of 1927, when he removed to Washington, D. C., to continue his professional work.

Dr. Higgins was taken ill about three weeks before his death, his illness being due to a streptococcus viridans septicemia, probably caused by an infected tooth. The immediate cause of his death was a streptococcic pneumonia of three days' duration. On April 7, 1928, at the home of his devoted classmate, Dr. G W. Leadbetter, surrounded by loved ones and friends of his college days, he passed on to the great beyond. On April 10th, in Union Street cemetery, Athens, Ohio, he was laid to rest among those who knew and loved him best.

Soon after coming to Salisbury Dr. Higgins became a member of the Rowan Medical Society. He had an active interest in the welfare of our organization, rarely missing one of its meetings, and always took an active part in all discussions bearing upon his specialty.

During his stay of four years in our midst we had the opportunity of placing a correct estimate upon his life and character. There was about this young man a fineness and distinction and natural modesty of which his associates were always aware. There was something strong about him, something clean and wholesome, a high regard for truth, a hatred for pretense and sham, a sterling sense of honor. When Henry Drummond, the eminent Scotch scientist and teacher of religion, was in this country, it was the talk throughout the American college world that whenever Drummond appeared among a group of students the moral temperature instantly rose. So it was with our friend and associate—his quiet, earnest, unruffled presence, and his fine young manhood was a censure to whatever was unmanly and unethical in others. His was a high type of idealism. He aspired to the heights. He sought the knowledge, the equipment, the experience which would qualify him to rank with the best. To the attaining of these mere pleasure-seeking was always subordinated; work always came first, and social and physical recreation last, if they came at all. This capacity for concentration, for holding to an ideal, for aspiring toward the attainment of a goal goes far toward explaining the promise he gave of a successful career.

Likewise, we would mention his large capacity for friendship. For, if we mistake not, this was one of his radiant qualities. Only the finest manhood makes it possible for one to be wholly loyal to another. No man can keep his devotion to another who does not keep his affection steady and strong even in the face of discouragement. Monroe Higgins had the capacity for such a friendship. His self-forgetfulness, his consideration, and his desire to promote the happiness and well-being of others made him the cherished and devoted friend. We would commend to you this exceptional capacity for friendship which was his. Such an example is worthy of our respect and emulation.

Recalling how early in his professional career our friend was taken—when only thirty-four—we may not understand the mysteries of Divine Providence. Had he fallen in the sere and yellow leaf of age we would have no mystery to solve. But after all a man's life is not measured in terms of years. In a man's character is his career and his reward.

Our friend whom we honor on this occasion died in the midst of a beautiful and consecrated life, with all the noble illusions of a high-minded youth undisturbed and undispelled. He died without having lost ambition, with his eyes fixed on the summit of the mountain, where in the province of time, had he lived, he would have climbed.

DR. WILLIAM D. HILLIARD

Dr. William D. Hilliard, age 70, one of Asheville's oldest practicing physicians, born March 11, 1858, died August 16, 1928. He came of a family of physicians, being the first born of Dr. W. L. Hilliard and Margaret Lane Hilliard. He graduated at the Jefferson Medical College in 1880. He served for a few years as physician at the State Hospital, Morganton, and one term as vice-President of this Society. He was coroner of Buncombe County for several years. He is survived by his wife, Halcyon Parker Hilliard, and one daughter, Mrs. Margaret Hilliard Engle.

DR. JOHN W. JONES, Winston-Salem

No data.

DR. A. R. JOYCE, Elkin

Dr. Joyce was born in Henry County, Va., 1841. He served through the War Between the States and after the close finished his medical education in the University of Virginia. He practiced medicine in both North Carolina and Virginia, until the infirmities of age caused his retirement. He died Nov. 1, 1928, at his home a few miles out of Elkin. In 1861 he married Miss Elizabeth Jenkins of Winston-Salem, who preceded him in crossing the river. Five daughters survive him.

DR. PAUL J. KLUTTZ

Dr. Paul J. Kluttz, aged 65, a resident of Maiden, N. C., died at the home of his son, Mr. L. F. Kluttz, at Newton, N. C., January 27, 1929. Dr. Kluttz was one of the best known physicians in his section of the State. He began the practice of medicine 44 years ago when he was only 21 years of age. Since that time he has had great success, both in the medical world and in a financial way. He was always interested in the development and progress of his town and community. In addition to this, Dr. Kluttz had been a political force in his community, having served his town as mayor and held other important positions.

DR. PEARLY J. LLOYD, Washington, N. C.

No data.

DR. W. T. LONG

Dr. W. T. Long, age 42, died at his home in Roxboro, N. C., October 21, 1928.

Dr. Long was a native of Roxboro and received his early education in the schools of that place. He later took his medical course at the Uni-

versity of Maryland. Dr. Long was one of the most prominent physicians of Person County.

DR. J. E. MALONE, Louisburg

Dr. Malone died at his home in Louisburg Nov. 29, 1928 at the age of 77. He practiced medicine for more than 50 years and was the Health Officer of Franklin County for a number of years until a short time ago when ill health made it impossible for him to continue. He was a regular attendant on the sessions of this Society and the North Carolina Public Health Association as long as he was physically able so to do. He is survived by a wife, who was Miss Mary Fuller, and three sons and two daughters.

DR. ADRIAN T. MILLIS

Dr. Adrian T. Millis, age 80, a prominent physician of Guilford County, died at his home at Guilford College, December 16, 1928.

Dr. Millis spent most of his life in the southern part of Guilford and in northern Randolph, where he served the community usefully. Since his retirement in 1890, he has lived in Greensboro. He was a member of the New Garden's Friends Church.

DR. CHARLES L. MINOR

By Paul H. Ringer

A tribute to my friend and colleague of many years' standing, whose death on December 26, 1928, brought to an end a life devoted to the practice of medicine, to the advancement of medical ideals, and to the upbuilding of a higher standard of general educational breadth for members of the profession.

Born in 1865, Dr. Minor, after preliminary education at the Episcopal High School at Alexandria, Va., studied medicine at the University of Virginia, graduating there in 1886. His graduation was followed by an internship of two years at St. Luke's Hospital in New York, which, in turn, was succeeded by two years of study in Europe. London, Dublin and principally Vienna were the cities in which he worked. Upon his return to the United States he took up the practice of medicine in Washington, D. C. Two years later, because of ill health, he came to Asheville, and, having gained the mastery over the disease that had laid hold upon him, began practice again, devoting his attention particularly to pulmonary diseases. In this field he soon became an outstanding figure, nationally and internationally.

With the passing of years his practice grew, his fame grew, and his reputation spread. In due time well-deserved honors were his lot, among which may be mentioned the presidency of the American Climatological and Clinical Association in 1913, the presidency of the National Tuberculosis Association in 1918, the presidency of the Southern Medical Association in 1925, and the conferring of the degree of LL.D. by the University of North Carolina in 1926.

In September, 1925, Dr. Minor suffered an attack of coronary occlusion. Making a good recovery, he continued his practice to an extent commensurate with conservation of his energies until, in November, 1928, repeated cardiac warnings forced him to seek rest. Unfortunately no benefit was derived, and on the 20th of December he returned to his home. After suffering several heart attacks during the succeeding days, he died very suddenly on the morning of the day after Christmas. These are the bald facts of a busy, versatile and varied life.

Those who enjoyed the privilege of knowing him well found a man keenly alive to the progress of medical science, devoted to his practice and to his patients, eager to do all in his power to help those appealing to him for aid. He was one of the very first to stress the importance of the psychic handling of tuberculous individuals, and many a time his inspiring talks in the privacy of the consultation room sent the patient out with "consolation for the past, comfort for the present, and hope for the future."

A speaker of marked conciseness and lucidity, and a man who, although devoting his attention primarily to diseases of the lungs, did not lose sight of the importance of the science of medicine as a whole, he was a constant attendant at medical meetings and a leader in discussions. With strong personal convictions and opinions, he did not hesitate to express them nor to defend them when challenged; and, though he might speak bluntly in the heat of argument, he never bore ill-will, and the battle of one hour led to the friendship of the next.

Because of the fact that Dr. Minor practiced in a city where there was no medical school, the South and the nation lost one of the best teachers imaginable. Fired by an enthusiasm which was contagious, he possessed that rare gift of logical exposition combined with an intense desire to make his presentation of the subject in hand appeal to the intellect and common sense of his auditors. While no classes in our medical school ever had the consecutive benefits of his profound knowledge and of his great gift in imparting it, hundreds of men throughout the country today are thankful for what they learned sitting at his side in his office while he examined a patient and gave freely and gladly of his knowledge and experience in the detection and intrepretation of the pathology of pulmonary conditions.

What Dr. Minor valued most in his professional life was the confidence and esteem of his fellow practitioners. This to him was priceless, and it was ever his endeavor in his dealings with patients referred to him and with physicians referring them, to show that that confidence had not been misplaced.

In private life he was devoted to his family, to his church and to the betterment of the city in which he lived. A zealous and tireless reader—not only of medicine, but of history, biography, philosophy, art; with an amazingly retentive memory, he again and again surprised his friends by his encyclopedic knowledge of subjects far afield from his chosen vocation.

He was one of the founders, twenty-five years ago, of the Pen and Plate Club of Asheville, a limited organization meeting monthly for dinner which was followed by a paper and full and free discussion. This club, in which his interests never waned, functions actively at the end of a quarter of a century.

Of his more personal traits it is difficult for the writer to speak because of his very deep and sincere affection for one that is no more. He was one of the most lovable men that ever lived, responding to evidences of affection and of esteem and returning them to the fullest measure. He was a good friend and a poor enemy. He was a man of strong likes and dislikes; but, while the former carried with them all the evidences of devotion and loyalty, the latter failed to contain malice and resentment. There never was a man more willing to admit his mistake when convinced, just as there never was a man more tenacious of his opinion as long as he was satisfied that it was correct.

His interests were many and varied, and into each one he put all the fire of his nature and all the zeal of his intense temperament. He was a leader and not a follower, a pioneer and not a trailer, one who looked forward and not back and strove to urge his fellows along the upward road. And now he is gone. The South and the nation have lost a great doctor, a true friend and a good man. He leaves behind him a memory that will ever be green and a void that will not be filled.

DR. CHARLES L. MINOR

By Haywood Parker

Dr. Minor was more than a distinguished and beloved physician,—he was an outstanding and useful citizen. He was always keenly and actively alive to the best interests of his community, his state, and his nation. His active and brilliant mind, cultured and broadened by education and travel, and spurred by his unselfish zeal for civic betterments in every line, was constantly devising and suggesting reforms and improvements, many very practical and necessary, some deemed idealistic by those of lesser vision. His earnest and zealous advocacy of these unselfish suggestions made him a stimulating, constructive and outstanding citizen. He was a leader in thought rather than a leader of men. His ideals were too high, his mind too active, and his spirit too impatient for successful mass leadership.

He was not only a dreamer and a thinker; he was also a worker, and he gave freely and liberally of his time and his means to various organizations for the social, intellectual, and general civic betterment of his community, and he took an active and interested part in their actual work. He was a founder of the Pen and Plate Club, and one of the organizers of the Civitan Club, in both of which he was an outstanding leader. He was an active member of various other organizations for social, intellectual and civic improvement, and in all of them his was a helpful and stimulating influence.

Dr. Minor was a man of deep spirituality which gave to his sparkling, vivacious nature a peculiar charm, and made him a most delightful friend and companion. He dearly loved social intercourse with congenial spirits, and his home was the center of gracious hospitality, constantly dispensing the purest and best in social and intellectual enjoyment.

Dr. Minor was a most valuable citizen, whose strong personality and unselfish activities will leave a lasting and stimulating influence on this community.

We shall miss him sadly; we will cherish his memory.

IN MEMORY OF DR. MINOR

Death comes with great poignancy and fraught with deepest feeling, when it ends the life of the true physician, bringing to his fellow doctors a sense of irreparable loss.

In the death of Charles L. Minor, the Buncombe County Medical Society, his community, his state, and country mourn the passing of one whose high place in an honored profession, whose sterling ideals of virtue and civic leadership, whose character and work have left an indelible mark on all fortunate enough to come within his sphere.

A man whose creed was supreme loyalty to his profession, whose practice was infinite care of every individual patient, whose talents and abilities were manifold, wide, and wise, whose interests embraced active participation in the affairs of his beloved church and city leaves a void not soon to be filled.

Dr. Minor was honored and appreciated as well as loved, not only by the hundreds of devoted patients to whom in his long, useful life he ministered; but so highly thought of was he by his professional brothers that he was the recipient of the highest honors that could be accorded him by his medical colleagues.

As one of the founders of the National Society for the Study and Prevention of Tuberculosis,—later and now known as the National Tuberculosis Association,—he always was active in its affairs, and served it as president in 1917-1918. A deep student of the problem of climate in its relation to disease, he was ever active in the American Climatological and Clinical Association, of which he was president in 1912. The Southern Medical Association honored him and itself by making him president in 1924.

Dr. Minor's practice knew not the limits of his community and state, but his patients came from many states and countries. His zealous interest for his patient, his detailed knowledge and sympathy with each sufferer's ills of the body and the soul, his incessant thirst for more knowledge were all spent by a body many times wracked by physical ills. Despite numerous serious sicknesses that might have sadly handicapped a lesser soul, his triumph was that of a soul and spirit that knew not failure nor defeat.

And so, in the passing of this great man and physician, it is altogether fitting that those of us who knew him best and honored him most should

pause to pay this tribute of respect to his memory. In special meeting assembled, the Buncombe County Medical Society orders that this minute of respect to his memory be placed forever on the pages of its records, and extends to his bereaved family the sympathy of his fellow members.

For the Buncombe County Medical Society,

M. C. Milender,
Joseph B. Greene,
Chas. Hartwell Cocke.

Asheville, N. C., December 26, 1928.

DR. CHARLES LAUNCELOT MINOR

(From the Annals of *Internal Medicine*, published by The American College of Physicians, February, 1929.)

When Charles Launcelot Minor, M.D., LL.D., specialist in tuberculosis and a brilliant writer, died at his home in Biltmore Forest, N. C., in his sixty-fourth year Wednesday morning, December 26, 1928, the medical profession and The American College of Physicians lost a member who had achieved national and international fame.

Although he had suffered from heart trouble for several years, his death came suddenly. He died at eight o'clock in the morning, a few minutes after he had begun to dress for breakfast.

Dr. Minor ranks with Trudeau in discovering and disseminating the treatment of tuberculosis. He was generally credited with having been the first physician to realize the importance of the psychological element in the management of tuberculous patients. He was a pioneer in perfecting the method of making physical examinations, which he early considered as important as laboratory tests.

After securing his medical degree at the University of Virginia in 1886, Dr. Minor was house physician in St. Luke's Hospital in New York, 1886-1888. He then went abroad, doing postgraduate work in Berlin, Dublin, London, Paris and Vienna. Returning to this country, he began the general practice of medicine in Washington, D. C., but in 1895, having developed tuberculosis, he moved to Asheville, which was thereafter his home.

In studying his own case, he developed a deep interest in tuberculosis, and, having achieved a rapid recovery, began his career as a specialist in pulmonary diseases. His success was pronounced from the start. His reputation was soon established, and his fame became nation-wide.

He was not satisfied with giving his patients the results of his study and genius. He had a veritable passion for educating both the public and the medical profession in the best way to combat what was then called "the Great White Plague."

He wrote on the subject constantly and forcefully. His contribution on "Symptoms and Diagnosis of Tuberculosis" in Klebs' "Tuberculosis," published by D. Appleton and Company in 1908, still ranks as one of the greatest pronouncements on the subject in the English tongue.

He contributed many articles to both medical and lay journals, all for the purpose of spreading the gospel of the effective treatment of tuberculosis. His brochures on the subject are regarded as classics in medical literature.

Dr. Minor was also in great demand as a speaker before medical conventions. His eloquence and his thorough knowledge of his subject, combined with his forceful personality, gave him a tremendous acquaintance and popularity among the physicians and surgeons of this and other countries.

His eminence and success as a practitioner were paid the tribute of many honors. He was president of the American Climatological and Clinical Association in 1913; president of the National Tuberculosis Association in 1918; president of the Southern Medical Association in 1924. He was a member of the American Medical Association, the Association of American Physicians, and of other medical societies. He was governor for North Carolina of the American College of Physicians.

His constructive ability in his profession was matched by his activities in the life of his home town. He was a member of the Pen and Plate Club, the Civitan Club, and the Biltmore Forest Country Club; the Colonade Club and the chapters of Delta Psi, Alpha Omega Alpha, and the Phi Beta Kappa fraternities at the University of Virginia.

He was a member and vestryman of Trinity Episcopal Church of Asheville. And with the same enthusiasm that he worked for the advancement of his church, he labored for the development and progress of his city.

No better description of Charles Launcelot Minor as a man can be found than the following paragraph from an editorial in The Asheville *Citizen* at the time of his death:

"But it is to his personality that his friends—and all Ashevillians were his friends—today pay the proudest and most loving tribute. Dr. Minor was a man beloved by his community. His unfailing charm, his flashing wit, his profound and versatile scholarship, his lively interest in all human affairs and his eagerness to be of service to all with whom he came in contact—these qualities of the man endeared him to our people to a degree of affection that seldom is given to anybody."

In 1926, when Dr. Minor was given the degree of Doctor of Laws by the University of North Carolina, the citation accompanying the award, written by Dr. Archibald Henderson, said: "Charles Launcelot Minor, Asheville. Born in Brooklyn, N. Y., M.D. of the University of Virginia; later prosecuted detailed researches in medical science in England and on the continent. Through intimate association with the famous Viennese bacteriologist, Klebs, to whose renowned book 'Tuberculose' he contributed an important chapter, he early turned the full current of his eclectic mentality upon the complex problems of tuberculosis, its diagnosis, treatment and prevention. Author of many authoritative scientific publications, chiefly devoted to the study of tuberculosis, he ranks today as an authority

Charles L. Minor

on that disease without a superior in the entire country. Versatile in attainments, eclectic in taste, like the late Dr. Weir Mitchell, he has, through the magic of his sympathetic and scintillating personality as well as by the depth of his knowledge and the range of his interests, won alike the unquestioned confidence and ardent devotion of his patients. Upon this scientific expert the University will now confer the degree of Doctor of Laws."

Funeral services for Dr. Minor were held the afternoon of December 27, 1928, at Trinity Episcopal Church in Asheville, with the Right Reverend Junius M. Horner, bishop of the diocese, and the Rev. George Floyd Rogers, rector of Trinity, officiating. The body was then taken to New York, where interment was made in Greenwood cemetery.

Although he received the greater part of his education in Virginia schools and at the University of Virginia, and though he was so thoroughly identified with the South, Dr. Minor was born in Brooklyn, N. Y., May 10, 1865. His parents were Dr. James Monroe Minor of Fredericksburg, Va., and Mrs. Ellen J. Pierrepont Minor of Brooklyn.

He is survived by his widow, who was Miss Mary McDowell Venable of Charlottesville, Va., and by three children, one of them a son, Dr. John Minor, now practicing medicine in Washington, D. C.

Dr. Minor was a great physician and a great citizen. He loved men and he loved books. His loyalty to friends and to his community and country was limitless. His career may well serve as a guide to any man who wishes to achieve eminence in his profession and worth to his fellows.

(Furnished by Dr. Thompson Frazer, Fellow, Asheville, N. C.)

CHARLES L. MINOR

(Editorial from the Asheville *Times*)

As a physician, and especially in his field of the treatment and prevention of tuberculosis, Dr. Minor's reputation was international. As a student of this plague upon mankind he early attained distinction, both in this country and in Europe where for several years he was associated with old world specialists in research work.

But it is above all as the public-spirited citizen, the man of wide interests, of deep culture, of enthusiastic devotion for all good causes, that his almost sudden death will be most deeply lamented by the people of Asheville.

Most men meet life with courage. But to courage Dr. Minor added the initiative of a spirit always seeking adventure—in friendships, in the acquisition of knowledge, in fighting for the things in which he believed. He had a rare zest for the business of living. With such a spirit he enjoyed life to the full in all its phases and therefore he lived a life unusually full and well rounded.

Since 1895 he had made Asheville his home. In the practice of his profession his personality, his kindliness and sincere interest in all things relating to his patients, made him a doctor beloved.

On every question of civic welfare, Dr. Minor had strong convictions and the courage to speak out when others might be awaiting developments. Only a few months ago he delivered an address here on the esthetic and cultural problems of Asheville that will always be remembered by those who heard it, not only for its persuasive logic but for its manifestation of his wholehearted concern for the balanced growth of his adopted home city.

On such occasions Dr. Minor was outspokenly didactic, and without any apologies. He believed that all civic organizations, all civic agencies, should take to heart their responsibility for moral and esthetic advancement.

With something that seems to have been a premonition of his going away, Dr. Minor returned to his Biltmore Forest home for Christmas, after having planned to spend it with his children in Washington and Long Island. And so, as he would have wished it, the end came for him where he spent the best years of his distinguished career, in the community whose sound progress was so dear to his heart.

WALTER COLTON MURPHY, M.D.

1852—1928

By G. M. Cooper, M.D.

Doctor Walter Colton Murphy was born at Wallace, Duplin County, April 18, 1852. He died at Burgaw in the home of his sister, Mrs. Calla S. Moore, on August 21, 1928.

Doctor Murphy was the son of Dr. Hanson Finlay Murphy and his wife, Elizabeth Simpson Murphy. When he was a small boy his father moved from Wallace to his large plantation near Burgaw, in the part of New Hanover County which is now included in Pender County. His boyhood days were spent on the farm, and his primary education derived from private tutors.

After completing his preparatory course he attended Columbian College at Washington, now George Washington University. Having read medicine with his father, as was the customary practice in those days, he graduated from the medical department of the Columbian institution after two years' studies, graduating in 1873, just before he was twenty-one years of age.

Soon after he graduated, his distinguished uncle, the late Dr. C. Tate Murphy, who had an extensive practice in Taylor's Bridge Township, Sampson County, removed from that place to Clinton, and Dr. Walter Murphy took his uncle's place in carrying on the country practice in the Taylor's Bridge section. He practiced his profession there over an extensive locality for several years.

Owing to age and infirmity, his father had to retire from practice. Dr. Murphy was induced to return to his old home place and carry on his father's work in Pender. Soon after the death of his father, Dr. Murphy

went to Burgaw, at that time the county seat of the new county of Pender. He practiced medicine for several years in Burgaw, and while practicing at that place he was secretary of the State Medical Society in 1884 and 1885.

As nearly all other men of like characteristics and ability have done before, he became weary of country practice, and after several years' successful work at Burgaw he went to Washington City and established a practice which for many years was successful in every respect. On February 12, 1896, he was married to Mrs. Mary Staples McNutt of Washington. He was at one time president of the North Carolina Society of Washington. He was a man of brilliant mind and attainments, thoroughly familiar with ethical and practical demands of his profession. It might be said he was "a doctor of the old school," yet quick in grasping all new scientific developments rapidly occurring in medicine and surgery, and applying such knowledge with skill to the demands of modern practice. Dr. Murphy had an enviable reputation as a skilful and accurate diagnostician.

Although Dr. Murphy had gone far in his profession in Washington he never forgot his old associations in the practice of medicine, and never failed to exemplify his increasing love for his native State. One of the most thoughtful and important acts of his in this connection was the presentation to the Medical Society of North Carolina volumes of transactions of the State Medical Society from its organization to the date of the gift. He did this while his distinguished nephew, Dr. John A. Ferrell, now of the International Health Board, was secretary of the State Medical Society, about 1914. Dr. Ferrell as secretary had the volumes bound and presented to the North Carolina State Library. The Society went on record in a resolution thanking Dr. Murphy for this important gift. This series of volumes is one of the very few available records of the Society's proceedings in past years existent in North Carolina.

Doctor Murphy, like his predecessor, Dr. C. Tate Murphy, in his early practice in Sampson County was known as "the poor man's friend." He never declined to render service where he possibly could, regardless of the patient's ability to pay. When he was nearly seventy-five years old, his health having failed, and suffering from infirmities of age and disease, he returned to the home of his sister at Burgaw a little more than a year before he died. His old neighbors and friends throughout the extent of his former practice at Burgaw gave loving testimony in his last illness to his universal kindness to the poor and afflicted which he exemplified in a practical manner in the earlier years of his practice.

Any medical history of North Carolina during the last century would of necessity have to accord a large place to the many distinguished physicians, of which Dr. Murphy was a fine representative, who were produced in the section of North Carolina in which he was born and in which he practiced his profession for so many years before leaving the State for larger fields.

DR. JAMES DAVISON McDOWELL

Dr. James Davison McDowell, 54 years of age, died at his home at York, N. C., June 3, 1928.

Dr. McDowell was educated at Davidson College and Bellevue Medical College, N. Y. During the world war he proffered his services to his country and entered the army in September, 1918, with the rank of major. He was stationed at Oteen where he was second in authority. Surviving are his widow and five children.

DR. WILLIAM WHITE McKENZIE

Dr. W. W. McKenzie, aged 59, a well known physician, died at a hospital at Salisbury, N. C., April 9, 1929. He was stricken with apoplexy two days prior to his death and never regained consciousness.

Dr. McKenzie was educated at the University of North Carolina and at Jefferson Medical College, Philadelphia, Pa. He had served as a member of the State Board of Medical Examiners, 1908-14, also was a member of the Tri-State Medical Association, and President of the Rowan County Medical Society. He was an honorary fellow of this Society. He was for many years surgeon for the Southern Railway. He was a member of St. Luke's Episcopal Church and had served on the vestry of this Church.

DR. WILLIAM WHITE McKENZIE

Dr. William White McKenzie, of Salisbury, was born in Salisbury Otcober 12, 1869; son of Chas. Harris and Ellen Sumner McKenzie. He attended the University of North Carolina from 1888 to 1891, later entering Jefferson Medical College, Philadelphia, graduating in 1893. He did post graduate work in New York Post Graduate School and Hospital. He married Miss Alice Caldwell, of Salisbury, on October 10, 1894. Four children were born to this union. Several years after the death of Mrs. McKenzie he was married to Miss Florence Robinson, of New Orleans, La., who with her son, W. W. McKenzie, Jr., survive him.

He practiced medicine in Salisbury from 1893 to 1929. He was physician to Whitehead Stokes Sanitarium, Salisbury; local surgeon to Southern Railway; was city health physician of Salisbury, 1904-1912; president Board of Medical Examiners of North Carolina, 1908. He was a member of the A. M. A., N. C. Medical Association, V. P. 1903, Tri-State Medical Association, V. P. 1908; Rowan County Medical Society, president, 1900-1. We was an Episcopalian and a Mason. He also was a member of the County and City Tuberculosis Association. He won the medal at Jefferson Medical College for standing at the head of his class of 1893.

While the above facts reflect credit and honor upon the man and bring satisfaction and admiration to his friends, yet one in reading would entirely miss the true Dr. McKenzie, the outstanding purpose of his life, the genial current of his soul. So to see the true light let us quote simply this: "He went about doing good." This sentence characterizes quite

accurately the real, true, unselfish physician that endeared Dr. McKenzie to his innumerable patients. They loved him, they were unusually loyal to him, and they trusted him because he sympathized with them, comforted them and served them faithfully. When the distress call came to him, be it day, or be it night, from the rich or from the poor, it was always answered in the same courteous, cheerful manner, and responded to whenever he was able to do so.

His time and energy were no less freely given than his material help. Upon countless occasions he has furnished medicine free to the needy. Always genial, happy, cheerful and encouraging, his presence in the sick room acted like balm to a sick, tired soul or a suffering body: his encouragement and cheer, like the cadence of a lasting benediction. How he was held in esteem and love by his devoted patients was well evidenced by the countless throngs in all walks of life who came to pay a last respect to his memory, to shed a tear over the loss of a friend, a tribute to be envied by any one who loved his fellowmen. If ever a physician worked unceasingly and unselfishly to relieve and comfort his patients, Dr. McKenzie was an outstanding example. When we think of the force and meaning of these two words—worked, served—among the people whom he loved so well, would not such a sesame as this open the gates of any paradise? For it has been said, "In as much as ye have done it unto one of the least of these, My Brethren, ye have done it unto me."

The medical fraternity mourns in his death the loss of one of their number who has achieved much, worked faithfully, served unselfishly and usefully. Toward him they can point with the finger of pride as one who has qualified most successfully as the family doctor, the general practitioner, the friend of suffering humanity. And now that he has gone "to join the innumerable caravan which moves to that mysterious realm," let him "approach with unfaltering trust" and having "wrapped the drapery of his couch about him, lie down to pleasant dreams"—and peace.

H. L. Monk,
C. W. Woodson,
C. W. Armstrong.

W. W. McKENZIE

By B. K. Hays and L. B. McBrayer

Our service on the State Board of Medical Examiners with Dr. McKenzie prompts this tribute, because in that six years of service together we learned to know him and to know him was to love him. He knew every man that stood the examinations for license during that six years and loved them and they loved him. He was examiner in anatomy and some of us felt that he was possibly too liberal with his grades, but when the examinations were over and an analysis of grades was made, we usually found that those that made a passing mark on his branch were passed by the other members and were given a license. When his health

was good it was said that he did the largest practice of any physician in Salisbury. He loved his patients and they loved him. It was said that he knew more people in Rowan County than any other man in the county and they all loved him and he loved them. McKenzie, dear friend, may you rest in peace and your friends will continue to love you.

DR. CHARLES BANKS McNAIRY

Dr. C. Banks McNairy, 61 years of age, died at his home at Lenoir October 29, 1928.

Dr. McNairy was a son of Dr. Wyatt and Elizabeth Mebane McNairy of Guilford County. He attended school at Pleasant Lodge Academy and at Catawba College. He studied medicine with Dr. Fox, the family physician, and later entered College of Physicians and Surgeons of Baltimore, Md., from which he graduated in 1893. He founded the first hospital in Caldwell County, which he operated until the State called him to become the head of the Caswell Training School for feeble minded at Kinston, where he served efficiently until 1924, when he returned to Lenoir and again took up private practice.

DR. C. BANKS McNAIRY

Dr. R. S. McGeachy, Kinston: I became associated with Dr. McNairy in Lenoir in 1921. We were both officers of the Presbyterian Church and I was a member of his Bible Class from the time I went to Kinston in 1921 until he left there in 1925.

I have never known Dr. McNairy's superior in any way. I worked with him at the Caswell Training School, visited him at Kinston, and when he was back in Lenoir, and visited with him the poor mountain homes and saw the reverence of the people there for him. I visited the wards of the Caswell Training School and saw those feeble-minded children there hang on his coat tail and how they would obey when he spoke to them.

I wish I could say just one half of what I feel for Dr. McNairy.

DR. C. BANKS McNAIRY

By L. B. McBrayer

The writer had the pleasure of knowing Dr. McNairy for many years and as a member of the First Board of Trustees of the North Carolina School for Feeble-minded, now the Caswell Training School, took a small part in placing him at the head of that institution before it was ready to receive a child. Whether I have ever rendered any service to my State and its people beside this one thing is beside the point, but I want to testify here and now that I have no doubt about having rendered a great and large service to my State when I helped to place Dr. McNairy at the head of that institution.

He studied every phase of feeble-mindedness and was recognized as an authority. He was in demand in many states for conferences and ad-

dresses; the people interested seeking light and knowledge on the subject and desiring that he pass it on to their people. He was president of the National Association for the study of feeble-mindedness.

His heart as well as his mind was in this work. He knew and loved every child in the institution and with what mentality they had they loved him and showed it every time he came into their presence. He was first to bring to the attention of our people, and it was before the North Carolina Conference for Social Service, the importance of sterilization in certain cases, and was severely criticized both publicly and privately for this stand. One year later before the same conference in the same room Governor Bickett made the same recommendation and was cheered to the echo. And at the last session of our general assembly when they passed what is supposed to be a workable law covering this situation, McNairy had all but been forgotten, so quickly do we forget, but it was he who sowed the seed and watered and tended the growth that made the law referred to possible. Whether forgotten or acclaimed, McNairy lives forever in the Caswell Training School and in the lives of the children who have been cared for and benefited there and will in all the future years be cared for and benefited there, in the homes from which these children have and may come, in the higher and fuller life of the people of our State and many other states and our very nation itself, made possible by the life and teachings of McNairy. God has taken him unto himself, that is where he belongs, and those sainted souls up there will be happier for his being there, and when those of us left on this mundane sphere reach the pearly gates of the new Jerusalem he will be there to welcome us and we will be happier for his being there. And as our race improves year by year and century by century may we have other men like McNairy to point the way, but McNairy's spirit will be guiding us forever and a day.

DR. JAMES W. McNEILL

Dr. J. W. McNeill, aged 79, former president of the Medical Society of the State of North Carolina, dean of the profession in Cumberland County and one of the few physicians in this state who had practiced medicine for more than half a century, died suddenly at his home at Fayetteville, January 7, 1929. Dr. McNeill was easily one of the foremost members of his profession in the state. As a citizen he was one of the leading spirits of Fayetteville. His interests were almost universal. He was not only a pioneer in the modern practices of medicine, but was essentially a humanitarian.

Dr. McNeill first practiced in Warsaw before removing to Fayetteville and he had practiced fifty-two years in Fayetteville before his death. He graduated from the Bellevue Medical College, New York. He had served as City and County Health Officer for a number of years.

DR. J. W. McNEILL

By The Cumberland County Medical Society

Dr. James William McNeill, distinguished, faithful, and beloved physician; public spirited, unselfish Christian gentleman and citizen; kind and hospitable friend; for more than fifty years a faithful and devoted member of the First Presbyterian Church, died at his home in Fayetteville, on January 7, 1929. Nature smiled in all her glory with not one cloud to be seen in the beautiful sky on the morning of his death. When he started out on his daily professional routine, he was suddenly called to the reward that awaited him in the Great Beyond, coming in possession of the daily deposit that he had in store in Eternity with the assurance that God is just and will reward his laborers.

Dr. McNeill was born near Fayetteville, N. C., at "Ardulussa," the beautiful country home of his family, on June 28, 1849. He graduated from Bellevue Hospital Medical College in 1876, and in May, 1876, he began the practice of medicine and joined the North Carolina Medical Society of which he has been a member ever since. He was elected President of the North Carolina Medical Society in 1892, and he has been an Honorary Fellow of this Society for many years. At the time of his death and for many years prior thereto, he was the Health Officer of Cumberland County. Well might we take to heart the example set by him as a pattern for our lives, and in that spirit we should strive to remember him for to such as he does the practice of medicine owe its encomium, "The Noble Profession."

After working his way through school, Dr. McNeill began the practice of medicine under conditions that do not exist today. He was easily one of the most prominent physicians in North Carolina. As a citizen of Fayetteville and Cumberland County he was one of the leaders. Though his interest was universal his chief goal was to go about relieving the suffering, and his treasures were stored with those who suffered. For more than fifty years in the general practice of medicine he gave untiring, faithful and loyal service to his patients, never counting the cost to himself in time or money, but thinking only of what he might do for the alleviation of the pain and suffering of the sick and afflicted. Throughout all this time no man ever possessed a happier spirit or more sanguine temperament. He loved everybody in the World and his very being was a constant spring of good-will, good cheer and good fellowship. In the death of Dr. McNeill the profession has sustained a loss that will be difficult to restore. There could be no greater objective, no greater goal in the life of any young man in the profession than to strive to fill this vacancy—an inspiration, a vision, a dream!

THEREFORE BE IT RESOLVED that the Cumberland County Medical Society express its sincere and heartfelt sympathy for his loved ones in their sorrow, and that a copy of this resolution be spread on

the official Minutes of the Cumberland County Medical Society, and offer to the Medical Society of the State of North Carolina for inclusion in its transactions.

Respectfully submitted,

J. F. HIGHSMITH, SR.,
W. S. JORDAN,
COL. DAVID BAKER,
Committee.

DR. JAMES W. McNEILL

DR. R. S. MCGEACHY, Kinston: With regard to Dr. James W. McNeill, he was my mother's brother. He would have been eighty years old had he lived until next June. I studied medicine with Dr. McNeill and lived in his house and went with him to the Presbyterian Church. He was an elder of that Church for years. About all I can say for Uncle James is the first words of the editorial in the *News and Observer* after his death. The first sentence of that editorial was: "They just don't make better men than Dr. James W. McNeill."

DOCTOR OF OLD SCHOOL—A SAINT ON EARTH

Story of the Life of a Christian Worthy of Emulation

By MARY VAUGHAN

In the passing of Dr. James William McNeill, of Fayetteville, a great man has gone home. Much has been written of his virtues. Eulogy comes after one is dead, but he must have know the esteem in which he was held by the whole county of Cumberland and this section of the State. He loved everybody, rich and poor, white and black, freeman and convict, and they all loved him. If he ever had an enemy that man has kept his feelings to himself and he didn't feel that way long.

Our country has produced great philanthropists who have given millions for the alleviation of suffering. They gave the money they worked for and earned. Dr. McNeill was a great philanthropist in a broader way. He gave himself and his time for more than half a century, not only to help the ills of the body, but more particular the ills of the soul. It was a rare combination.

He was a doctor of the old school, the bedside physician, the close, personal friend of the family. Perhaps his staunchest friends were the poor to whom he gladly went when they needed him, knowing that he would not be paid. When he first began the practice of medicine, 52 years ago, the fee for a call was one dollar. Many a time he has accepted the dollar, then given it back to the patient to buy medicine. In those days he drove a horse and high-wheeled sulky. He knew every side road and pig path in a radius of 40 miles around Fayetteville, for he traveled them all. And everywhere he went he carried with him his superb skill and cheer and friendliness and loving kindness and some calomel, blue mass and castor oil in a little worn leather bag. If the case was critical he

pulled off his coat, rolled up his sleeves and stayed right there. When his skill and the contents of the little bag seemed to fail, he knelt by the bedside and called into consultation his God. Another rare combination, often most effectual. The crown of glory of the old school doctor must surely be all a-glitter.

He called us all, old and young, "little girls" and we warmed up to him immediately. The men were "Old Men" and "Buddie" and they likewise responded. His personality was a magnet that drew even strangers to him. He was a friend to man. His piety was never ostentatious—it was just a powerful quiet, force within him, that radiated without. You somehow felt that he walked with God and all the time he might be telling you of rafting timber down the creek just after the Civil War. The Grace of God in His children is just as apparent as the sun and moon.

The influence of a good man is hard to estimate. The influence Dr. McNeill wielded in this community was simply being what he was.

His last Sunday was spent just as others were for many years. Mens' prayer meeting at the Y. M. C. A. at 8:30, Sunday School at 10, preaching at 11, service at the convict camp at 2, preaching at 7:30—five services and he nearly 80 years old. For 12 years he has been going to the convict camp every Sunday afternoon talking and singing with the boys and telling them about his Master. If there were 50 convicts he would get five dollars (his own money) changed into dimes and give each one a dime to buy tobacco. I asked him once if many of the men were re-sentenced. He said, "Not many." He loved them all, and the other day when he was laid to rest they asked permission to fill the grave after the funeral service. The wish was granted. The session of the Presbyterian church, the Cumberland County Medical Society, the Fayetteville Independent Light Infantry, various fraternal orders, and last, but by no means least, the convict camp took part in the last rites.

He gave all and more than he could afford to his church. The dining room of his home was small, and Mrs. McNeill talked to him some time ago about enlarging it.

"No, Annie," he said "I must give the money that would cost to the Lord."

The House of the Lord God Jehovah was his dwelling and he spent much time there. He now lives, forever and forever, in the mansion prepared for him by his Saviour.

DR. G. S. McPHERSON

Dr. G. S. McPherson died at his home in Asheville May 23, 1928. He graduated from the Medical School of Harvard University in 1894, was licensed by the Sate Board of Examiners in 1919 and joined the State Medical Society in 1920.

The following is a tribute by the Buncombe County Medical Society of which he was a member:

"Dr. McPherson came to Asheville just at the conclusion of the war. At no time in his service here did his physical vigor admit of very active participation in the affairs of the society, but those of us privileged to know him soon learned to value his fine qualities of heart and mind. He was a cultivated gentleman, an experienced, well educated doctor, who spared neither time, energy nor effort to do his all for his patients' welfare. Ever courteous, modest to a fault, with a retiring disposition, conscientious, scrupulous in every detail of his professional and personal life, a man of high ideals, a devoted husband and father, he has gone to the far country from which no traveler returns. And so, in his passing, we wish here to record the deep sense of loss we feel at his going, our appreciation of his many fine qualities as man and physician, and our sincere sympathy to his bereaved family."

DR. GEORGE H. PACKARD, Meredith, N. H.

Dr. Packard was born in East Boston, August 6, 1865, and died September 10, 1928, at the Peter Bent Brigham Hospital, Boston.

For a number of years Dr. Packard was a practicing physician in Medford and conducted a private hospital at 72 Salem Street. He also served as city physician. In 1914 he gave up his practice there to go to White Rock, N. C., where for nine years he worked among the people of the mountains and was instrumental in founding a hospital. During that time he was under the Presbyterian Board of Missions. In 1923, due to the fact that his health was failing, he returned North to his summer home in Meredith, where he spent the remainder of his life and where he and Mrs. Packard grew into the life of the community.

Dr. Packard established the first rural hospital in our State, in the mountain fastnesses of Madison some 10 or 12 miles from Marshall, at a point where formerly there was a Presbyterian school, and rendered a great service to the people over a large area. The hospital continues at this time. Dr. Packard was a consistant Fellow and attendant of this society and when ill health made it necessary for him to return to his former home he continued his membership with us.

DR. J. E. PERSON

In the death of Dr. J. E. Person, which occurred at his home near Pikeville, January 21, 1929, Wayne County lost one of her pioneer physicians. Dr. Person died after a slow decline, being in his 77th year.

DR. J. B. SMITH

Dr. J. B. Smith, prominent physician of Pilot Mountain, died at a hospital in Winston-Salem, May 31, 1928. Dr. Smith was 67 years of age and had been practicing medicine at Pilot Mountain since 1885.

DR. JOHN SWEANEY

Dr. John Sweaney, aged 71, prominent physician of Durham who retired several years ago, died March 23, 1929. He came to Durham in 1915 from Leaksville-Spray and was highly esteemed, both as a citizen and as a physician. He is survived by his widow and four children.

DR. JOSHUA TAYLOE

Dr. Joshua Tayloe died at his home in Washington, December 20, 1928.

Dr. Tayloe was 58 years of age at the time of his death. He graduated from Bellevue Hospital Medical School, New York, 1892.

WIDELY MOURNED

Seldom has there been a death in Eastern Carolina that has been so widely mourned as that of Dr. "Josh." He had thousands of loyal and devoted friends, and there were many additional thousands who knew him by reputation. His ability as a physician, his genial character, his loyal devotion to the members of his family and his readiness to make any sacrifice for a friend endeared him to all who knew him.

Despite his poor health Dr. Tayloe insisted upon continuing his practice. At 8:30 o'clock Tuesday evening, just a few hours before his death, he was told that Joe Boone was ill and wanted to see him. "I reckon I'll have to go and see how old Joe's getting along," he told the men at the drug store. Later Dr. Josh went home, but he didn't go to bed because he always sat up until he felt sleepy, regardless of what the hour might be. With his sisters he talked about the approaching holidays. "I mustn't forget to send Armistead something in the morning. It'd never do to forget that boy," he said. He also talked of some other presents that he wished to send.

Miss Ella and Miss Mae, his sisters, retired for the night. Dr. Josh sat up with Jesse Moore, talking about the sale of some tobacco. He started to write out a check, and, after sitting at the desk a moment, said to Jesse: "I can't seem to see well, I can't write," and then he fell over.

DR. JOSHUA TAYLOE

By Jas. M. Northington

(In *Southern Medicine and Surgery*)

December 4th I sat beside Dr. Josh at dinner, and our conversation was mostly about the sudden taking off of Mr. C. C. Coddington, well known to both of us. December 20th a telegram came from Dr. Dave saying that Dr. Josh was dead from a stroke. Christmas brought little joy to Washington town and Beaufort county; Dr. Josh, the friend and succor equally of the high and mighty and of them who have no helper, had just died.

The son of an honored doctor, David T. Tayloe, and the younger brother of another, of the same name, and posessed of a heart which beat in sympathy with distress, nothing was more natural than that Josh Tayloe would take to medicine; and from his graduation in 1892 from Bellevue Hospital Medical School to the day of his death he was doctor to his people.

He was born in Washington and he loved his relatives, his friends and his work too well to be willing to leave them often or for long. That they reciprocated this feeling is evidenced by their making him alderman, county coroner, superintendent of health and mayor—and even more by the demonstrations of the multitude to whom he was doctor, indeed.

Directly after his graduation he associated himself in practice with Dr. Dave Tayloe, and the relationship between these brothers has been a thing beautiful to see and think on. As Dr. Dave's boys came to be doctors, and they joined on one by one, new units of strength had been added to this medical staff, with no loosening of the bonds which bound all its members in harmony, loyalty and affection.

As a doctor his greatest delight was in ministering to the worthy poor; as a brother he was devoted, thoughtful and self sacrificing; as a friend he lacked nothing. Whence comes such another?

DR. HENRY T. TRANTHAM

Dr. H. T. Trantham, of Salisbury, died in a hospital at that place on January 22, 1929.

Dr. Trantham was born on a plantation near Camden, S. C., and came to Salisbury from that place when a young man. He was educated at Wake Forest College and took his medical course in Philadelphia.

Dr. Trantham was the oldest physician in Rowan County, but for a number of years had not been actively engaged in the practice of his profession. For many years he enjoyed a very large practice in Salisbury. He was one of the best known men of the community—a splendid man and in his younger days took a great interest in all matters that stood for the advancement of his adopted city.

DR. HENRY T. TRANTHAM

Dr. Henry Truesdale Trantham, of Salisbury, was born in Camden, S. C., son of Dr. John Tearle and Elizabeth Angelina Drakeford Trantham, in November, 1852, and died from diabetic coma at the Salisbury Hospital in January, 1929. He was graduated from Wake Forest College and took his medical degree from the University of New York in the class of 1875 and served his internship at Bellevue Hospital. In 1881 he was happily married to Mary Ferrand Henderson, a member of the distinguished Henderson family of North Carolina. He traveled extensively in America and Europe. He was a true gentleman of the old South, distinguished in appearance, courtly in his manners, and a true southern aristocrat.

Dr. Trantham was an Honorary Fellow of his county society, the State Society, and a member of the A. M. A. He was always true to his exalted profession and well merited that wonderful title, "Family Physician." He served the city at one time as health officer, and was always active in civic matters. Early in his professional career, he was associated in practice, with our late and distinguished Dr. John Whitehead; and at that time, North Carolina had not two more honorable physicians. His life was always an inspiration to his profession, and among them his outstanding characteristic was his keen interpretation and observation of medical ethics. He was always loyal to his patients, ethical with his professional brethren and so lived that his life was a benediction to his community. We shall always cherish his memory and feel grateful that he lived among us and that he was our friend.

H. L. Monk,
C. W. Woodson,
C. W. Armstrong.

DR. H. J. WALKER

Dr. H. J. Walker, one of the most widely known physicians in North Carolina, died at the home of his daughter in Huntersville, November 15, 1928.

Dr. Walker was a native of Mecklenburg County and was 93 years of age at the time of his death. He was educated at Erskine College, was a Confederate veteran, serving in Company B, 13th North Carolina Regiment during the War Between the States. He was wounded at Gettysburg. He was a graduate of Jefferson Medical College, Philadelphia, and had practiced his profession for more than 50 years.

DR. H. J. WALKER

By Jas. R. Alexander

Dr. H. J. Walker was born in Steel Creek, Mecklenburg County, June 24, 1836, and died at Huntersville, N. C., November 15, 1928, in his ninety-third year. He married Miss Catherine Elizabeth Berryhill, also of the Steel Creek congregation. Mrs. Walker died about fifteen years ago. Dr. Walker is survived by two brothers, T. P. Walker, of Charlotte, and S. J. Walker, of Asheville, and two daughters, Mrs. J. B. Cochran, of Huntersville, and Mrs. J. C. Crowell, of Charlotte, and a son, J. O. Walker, a former mayor of Charlotte, and 21 grandchildren. Two other sons, Dr. C. E. Walker and Rev. W. L. Walker, D.D., both died suddenly a few years ago.

He was educated at Erskine College, at Due West, S. C. He volunteered in the early part of the Civil War and was promoted to the office of Lieutenant of Company B, 13th North Carolina Regiment. He was wounded in the first day's fighting at Gettysburg, and lost a leg. His brother was wounded on the third day of this great battle and likewise lost a leg.

Returning from the war he took up medicine and took his course at the University of New York, with three other prominent physicians of this section: Drs. R. J. Brevard and H. M. Wilder, both of Charlotte, and Dr. R. A. McLean, of Lincoln County, all of whom preceded Dr. Walker to the Great Beyond. Dr. Walker began practicing medicine in Steel Creek with Dr. Herrons, but early in the Seventies he located in Huntersville, where he did a large village and country practice and operated a drug store. The weather was never too cold or rainy, nor the roads too bad for "Dr. Jack" as he was affectionately called, for him to answer the calls of suffering humanity.

In 1891, his oldest son, Dr. C. E. Walker, graduated from the University of Maryland and father and son practiced together for a number of years. About 1906 Dr. Walker was elected county treasurer, which office he held for eight years.

Dr. Walker was an elder in the Presbyterian Church for a number of years and was a regular attendant upon divine services. He was affectionately regarded by his comrades in arms and was a member of Mecklenburg Camp of Confederate Veterans. He had a lovable, sunny disposition and was noted for his wit and humor. The Charlotte *Observer* said of him, "He was mightily loved by the people of Mecklenburg as soldier, doctor, and citizen, and in his death the county lost not only a citizen of sterling worth, but a man around whom the fondest traditions of the South clustered."

DR. L. A. WALKER

Dr. L. A. Walker, prominent for many years in professional life, died at his home in Burlington, December 27, 1928.

At the time of his passing, Dr. Walker was city health officer. He was associated with Dr. P. C. Brittle in practice.

Dr. Walker was 55 years of age, a man interested in the development of his city among all lines and was held in esteem by his fellow-professional men and by the citizens of every walk.

DR. L. A. WALKER

The members of the Alamance-Caswell Medical Society wish to give expression to the deep feeling of loss that they have in the death of Dr. Levi Albert Walker who had practiced medicine in this city and been a member of this Society since 1904.

Dr. Walker was born in Caswell County near Bush Arbor on November 28, 1870. He studied medicine in Richmond, Virginia, at the University College of Medicine, from which institution he was graduated in 1898 with the degree of Doctor of Medicine. He returned to the locality of his birth to practice his profession, setting up his office at Anderson's Store in Caswell County. There he led the self-sacrificing and useful life of a country doctor for six fruitful years during which time he endeared himself to the community.

He then moved to Burlington in 1904 and for the next quarter of a century continued here to practice his healing art until his death December 27, 1928. Here in even large measure, he endeared himself to an increased number of patients who learned to depend upon him for cheer and for relief from suffering.

The members of this Society feel that they have lost a comrade whose high spiritual ideals, professional ability, cheerful kindliness, and integrity of life, will make him sorely missed, but whose example should prove a spur for emulation.

C. W. McPherson,
B. B. McDade,
Geo. L. Carrington.

DR. ROBERT LEE WARREN, Dunn, N. C.

(See Coltrane.)

DR. CONRAD WATKINS, Winston-Salem, N. C.

No data.

DR. EDMUND T. WHITE

Dr. Edmund T. White, aged 70, died at his home at Oxford, July 31, 1928.

He was one of the most prominent men of his town, being president of the National Bank of Granville, member of the Board of Trustees of Duke University and of the Board of Stewards of Oxford Methodist Church. He was also a Rotarian.

Dr. White was a retired capitalist, having engaged in the tobacco business for a number of years after giving up the practice of medicine.

In Memory of

DR. E. T. WHITE, Oxford

By Dr. E. G. Moore

Leaves have their time to fall
And flowers to wither at the north wind's breath,
And stars to set; but thou hast all seasons
For thine own—O Death.

Life to an open mind is a beautiful and wonderful opportunity for human service, whose chief compensation does not consist of an accumulated wealth of lands or stocks or bonds, as many are so narrow as to believe, but in a deeper and truer sense, in the measure of service which one contributes to others, not so much in material things as in the example and influence of a worthy life consecrated to truth and expressive of good will towards others, and a devout purpose to be of helpful service in all measures that make for the betterment of our fellow man. In the plan and providence of God, the opportunity is given every man to so

live in service and fellowship with his fellow man, that the memory of his good will and good deeds will follow him long years after the dark portals of the grave have claimed him for its own. It is always with broken hearts that we commit our loved ones to their eternal rest, and tears will unbidden come when we realize that they are no more to gladden and comfort by their presence, the ties of friendship and love which entwined our lives and was the creation and very happiness of home. It is a fundamental fact that we were born to die. Death must come to each one and none can escape crossing the great divide between earth and eternity.

The impressions of youth are seldom out lived and the aftermath of years but intensify with a deeper significance the conceptions we gained and the opinions we formed during this period of association and friendship.

I was but a stripling lad of fifteen summers when I first met and knew Edmund T. White. Away from home for the first time and withal among strangers, I felt a loneliness peculiar to one of my age and environments, and with a homesickness seemingly difficult to overcome, I passed the ordeal of matriculation at Old Trinity, and was assigned a rooming place at the boarding house of Mrs. Susan White. It was there I became associated with Herbert Norris, Yancey Ormond, Grandison Edwards, William Mercer, Thomas Ivey, Rufus Crews and Ed. White, all of whom have crossed the boundary of life and now sleep the slumber of death.

Fine young men were each of these as students, and fine indeed the record they achieved in the different walks of life they pursued. Each viewed as an individual possessed different characteristics and temperaments and while congenial in intercourse and association, yet were markedly different and unlike in disposition and temperament and purpose. It was the pleasing manner and friendliness of Ed. White that attracted me and I was not long in adjusting myself to his companionship and becoming peculiarly attached to him, which appreciation lost none of its flavor as the years glided by and I knew him in the strength of his ripened character and the avowed purposefulness of his life. He never changed in individual character nor personal attitude, but grew more resplendent in the manly virtues which crowned his life and awoke a keener appreciation and love among his friends, none of whom ever deserted him and none of whom he ever lost except by death.

Those of you more closely related to him during the years of his active manhood and who have walked with him as the evening shadows crept upon him, I feel sure can testify that he lived a life above suspicion and beyond reproach.

Speaking more particularly of his young manhood and his relations among the student body, I can most truthfully say that he led an exemplary life and exalted himself in conduct and duty to the extent that he was the most honored and best loved among the large body of matriculates who gathered in the various classes at Old Trinity, from 1875 to 1878, the year of his graduation. He was distinct in his personality, always

neat in appearance, clean in mind and conduct, kind in disposition, friendly towards all, loyal in service and faithful in duty, always bright and cheery and possessing a fine sense of becoming humor. There were no dull moments when he was present, and yet he indulged in no objectionable sports and engaged in no questionable pastime. His conduct sought no grievance and carried no sting, and malevolence had no place in his heart, but his daily walk was along the path of peace and abundantly did his magnetism and the sunshine he dispensed increase the love of his friends. Full of life and spirit and abounding in a fine sense of humor yet he indulged no jokes and vulgar speech was unknown to him.

He was upright and above all things honorable and rarely gifted in those virtues which won for him distinction and a loyal support of his friends and associates. Without undue eulogy or fulsome expression my estimate of him is based upon my long acquaintance and appreciation of him and the completeness of my understanding of his many virtues and exceptional character. The example he set, the influence he exerted, the service he gave, the unblemished life he lived, will not be forgotten with the passing years, and sweet memories will ever linger to do honor to his life which he spent so unselfishly in devotion to right and consecration to duty.

He will be missed in the civic walks of life, in the religious atmosphere of his community and in all the departments which he served so faithfully; but he will be missed more in the home which he builded and cherished and by the family he reared and loved. Nothing can assuage their grief or compensate for the loss which they have sustained, and yet it must be a source of consolation that he has left them an heritage greater than all else, the memory of an honored life, a stainless character, a devoted friend and a christian gentleman.

Passing a useful life bristling with activity and energy and purpose, he ceased his pilgrimage at the foot of the hill, surrounded with the halo of sunsets glow, and glorified with the vision beyond the dark, of the sweet rest vouchsafed to all the faithful, eternal in the Heavens.

There is no death;
What seems so is mere transition,
This life of mortal breath
Is but a suburb of the life Elysian
Which we call death.

DR. E. T. WHITE

Dr. G. T. Sikes, Creedmoor: I should like to say one word with reference to Dr. White's life and character and manhood. My friend who composed that obituary was in school with Dr. White and was in school with me. He and I went in the same school twice, at Trinity College and at the University of Maryland, and he has written the life of Dr. White.

We were born and raised within a few miles of each other. I knew him before he went to college and knew him after he returned from college; I knew him as a man in business from the time he went into business after his return from his college until the day of his death. He was a high toned Christian gentleman. I have never heard a human being utter an unkindly remark against the life and character and Christian attainments and manhood of Dr. White. While he and I were not chums long, yet I knew him. He was really instrumental in having me go to his alma mater; I was thinking of going to the University of North Carolina and he talked with me and persuaded me to go to his institution. When I went to college I found his personality was fresh in the memory of the students there and in the memory of the teachers and of the people of Old Trinity. He was energetic, worked hard, attended to his business in this life, and left an example and reputation that will be an honor to his children and the people of his town, and to the friends and acquaintances with whom he worked. I should be derelict did I not on this occasion say a word about the character of that noble man.

DR. JAMES H. WITHERS

Dr. James H. Withers, aged 72, a prominent physician of Harnett County, died at a hospital in Raleigh, January, 1928.

He had practiced medicine in Harnett County and was eminently successful. He was a member and ruling elder of the Presbyterian Church and his interment was in the Leaflet Presbyterian Cemetery.

DR. BARTLETT JONES WITHERSPOON

Dr. Bartlett Jones Witherspoon, 57 years of age, for many years a prominent physician in his community, died at his home in Charlotte on June 9, 1928, of acute indigestion.

Dr. Witherspoon was a splendid physician and citizen. He was president of the Seaboard Air Line Railway Association of Surgeons. He was prominent in Masonry, a Rotarian, a member of the Charlotte Country Club, past president of the Mecklenburg Medical Society, and councilor for the seventh district of the North Carolina Medical Society. He had served several times as city alderman. He was a deacon in Westminster Presbyterian Church.

Dr. Witherspoon had been practicing medicine here for more than 30 years, and in that time he had won a large number of friends, attracted by his professional ability, his kindliness and his worth as a citizen. He was greatly interested in Charlotte and took an active interest in the life and development of the community. He enjoyed the confidence and respect of members of his profession and of citizens generally.

He leaves his widow, formerly Mrs. Page Carter Carson, of this city; a step-daughter, Miss Lucy Holmes Carson; and two sisters, Mrs. J. H. Hall, of Belmont, and Mrs. J. P. Young, of Chester, S. C. Miss Carson was in Ithaca, N. Y., at the time of his death.

Dr. Witherspoon was born in Lancaster, S. C., the son of Mr. and Mrs. Bartlett Jones Witherspoon, of that place. He secured his medical training at Charleston Medical College. He built up a large and varied practice, not confining himself to one specialty but having a varied and comprehensive practice among many people, who became his affectionate friends, trusting him fully.

DR. EDWARD JENNER WOOD

The sudden death of Dr. Edward Jenner Wood, 50 years of age, at his home in Wilmington, September 16, 1928, removed from the medical profession one of its outstanding figures. Dr. Wood was internationally known for his knowledge of pellagra and tropical diseases. At the time of his passing he was in conference with the Reverend A. D. P. Gilmour, pastor of the First Presbyterian Church of Wilmington.

EDWARD JENNER WOOD, M.D.
1878—1928

By George M. Cooper, M.D.

On account of the lack of time and space I have omitted in this contribution a record of the details of Dr. Wood's life. Those have been faithfully recorded elsewhere and others have taken care of them here.

To those who were privileged to know Dr. Wood no truer appraisal of his character could be recorded than to quote Osler's estimate of Pasteur: "In his growth the man kept pace with the scientist—heart and head held even sway in his life."

It means nothing for me to say that he was my friend, because he was the friend of all humanity; but one of the joyous satisfactions of my life is that I had the indisputable evidence that Dr. Wood recognized me as his friend. No tribute from my pen or heart could do his memory justice, but it is a pleasure fo me to bear humble testimony to his great worth as physician and friend.

His chief ambition in life was as Huxley's "To smite all humbugs, however big, to give a nobler tone to science" and to have "toleration for everything but lying." And after Huxley he believed "that there is no alleviation of the sufferings of mankind except veracity of thought and action, and the resolute facing of the world as it is."

Edward Wood was a born student, scientist and teacher. Up to the very moment of his death he was just as eager to learn new facts as any college student. His whole life was a living personification of honor and sincerity. He always reacted with profound disgust when thrown with men who were hypocritical or insincere. His contempt for scheming, self-seeking politicians, medical or otherwise, knew no bounds. At the same time he was possesed of more personal charm than any physician I have ever known. As a physician he was conscientious almost to a fault. In his daily work as a practicing physician his chief obsession was thoroughness.

Edward Jenner Wood, M.D.

He subscribed fully to Shakespeare's doctrine for doctors at least that "There is no darkness but ignorance," and that "Nothing great in science has ever been done by men, whatever their powers, in whom the Divine afflatus of the truth-seeker was wanting." He was a practical humanitarian. He felt that in any possible conflict between the interests of business and property rights on the one hand and the health of the people on the other that the interests of life and health should hold supreme. An illustration of this characteristic developed in 1916 when he was a member of the State Board of Health. In that summer infantile paralysis was becoming a serious menace throughout the country. About the time the scare was at is worst he telegraphed the State Health Officer requesting that the Board of Health be convened for the purpose of closing all schools of the State. That, of course, was not necessary, and he afterward realized it, but he held that no child of the State should be exposed to that terrible disease if possible to avoid it. He did not consider the cost in loss of time and the disruption of all social machinery. He felt that one little insignificant life outweighed everything else that could be thrown on the scales. If that is not the acid test of a true physician, then I do not know what could be.

Dr. Wood had at least three offers of full professorships to teach in important medical schools. These he declined. His chief reason for refusing such opportunities in a field where he would have been abundantly successful, was because he did not care to sacrifice one iota of his professional and personal independence. He knew that as a member of any faculty he would chafe under the necessary rules and regulations governing institutional work. But deeper than that he loved the practice of his profession a thousand times more than he cared for advancement and acclaim, and the empty honors of place and spotlight. Another thing, any such acceptance would have taken him away from Wilmington. He was happy in his home life and in his professional work. He had his office in the same place where his distinguished father had lived and worked. There surrounded by the library and many old associations of his father and inspired by family and friends to exert himself to the utmost he lived and worked and served his friends and patients as few men have ever done. A bacteriologist of the first rank, he practically applied his knowledge in his every day work. No sailor ever loved the sea with any more genuine affection than he loved his city and his work. Nothing ever pained him more than to come in contact with suffering which he was unable to relieve. His cheerful disposition and whimsical humor endeared him to everyone. His sincerity and earnestness commanded the respect of every individual he ever met. He was the confidant and helper of more practicing physicians at the time of his death than any other man in North Carolina. Although spending his professional life and doing his work quietly in the comparatively small town of Wilmington, long before his death his reputa-

tion and achievements were well established on two continents. His name was respected wherever scientific men foregathered in England as well as America. Had he lived he would have been one of the important invited participants in a great symposium on the deficiency diseases this week in the American College of Physicians at Boston.

As physicians we should all be proud of his record. In honoring his memory this Society is honoring itself. His life exemplified again "There is nothing so kingly as kindness, and nothing so royal as truth."

Fallen in the prime of a useful life, leaving work unfinished, and family and friends, we all mourn his loss as a loyal comrade; and we weep over him because "he had kept the whiteness of his soul."

The writer of "A Lay of Odin" must have had such a man as Edward Jenner Wood in mind when he wrote the beautiful line, "We ourselves die, but the fair fame never dies of him who has earned it."

MEMORIAL TO DR. EDWARD JENNER WOOD—PHYSICIAN, SCIENTIST, SCHOLAR

By Dr. J. G. Murphy, Wilmington, N. C.

With full realization of my inability to do justice to Doctor Wood, but having been associated with him all of our lives, with love and appreciation, I attempt to speak of his memory.

On July 12, 1878, Edward Jenner Wood was born in Wilmington, North Carolina, the son of Doctor Thomas Fanning Wood, a distinguished physician of his time, from whose foresight and energy and persistent efforts was born the North Carolina State Board of Health. His mother was Mary Sprunt, a daughter of the late Alexander Sprunt, and a sister of those two leading citizens who have so largely contributed to the progress and success of Wilmington, the late Doctor James Sprunt, and William H. Sprunt.

Edward Jenner Wood, after preparation in Catlett's School, entered the University of North Carolina in the fall of 1894 in the same class with the undersigned. He was graduated from there with the degree of B.S., and entered the University of Pennsylvania Medical School, from which he was duly graduated in 1902 with the degree of M.D. He spent a year in the hospitals in England, and returned to Wilmington and opened the office vacated by his father at his death in 1892, where he continued to practice until his earthly work was finished.

On Sunday afternoon, September 16, 1928, he died suddenly in his home while talking to his pastor who had stopped by for a call. He had been about his regular daily duties until the day before, and when the news of his death spread over the city, we were stunned, and have not yet recovered from the shock. Though he lived but fifty years he contributed more to medical science and literature than any other man in our state during this generation. He was selected to write many articles in our

text and reference books of today. He worked hard and played little. We regret that he did not play more.

He was an intensely religious man, and saw the hand of God in everything, and loved to think of Christ as a physician. He was an elder in the Presbyterian Church, and a regular attendant at church services.

Soon after he began his practice there spread a great scourge over our southland, pellagra. Nothing was found in our English literature on this disease, and Doctor Wood began its study with zeal and earnestness. He learned the Italian language, that he might read what appeared in the Italian journals about the presence of this same disease in southern Italy. He soon had a fine collection of case records, which he studied and compared, one with another, and with the symptoms of his patients at the bedside, and in a short time the doctors in this section of the state found themselves going to him to help solve their problems concerning this new and strange disease. In 1912 he published a book on pellagra which was the first published in the English language.

His next attention was directed to the study of sprue, and a few years later he went to Europe and spent a year in the study of sprue and other tropical diseases, and in recognition of his work, in 1921 the London School of Tropical Medicine conferred upon him the degree of Doctor of Tropical Medicine.

After his return from Europe he confined his practice to consultation by appointment. He had a wide and varied practice from over our state and throughout the south. He was a recognized authority on diseases of the heart.

During the World War he served as Lieutenant Commander in the Navy, and prior to this served as chairman of the Advisory Board of this district.

The State Medical Society honored him with its highest office. He was president in 1910. He was a member of the State Board of Health from 1913 to 1919.

Probably the highest recognition of his ability was shown when the American Association of Physicians elected him to membership in that body. He was the only man in this state up to that time who had ever received this honor. Less than one hundred members constituted the membership in this organization. He was given it in recognition of his work on sprue.

The December issue of *Southern Medicine and Surgery,* a monthly medical journal published at Charlotte, was a memorial edition to the Doctors Wood—Doctor Edward Jenner Wood, and his father, Doctor Thomas Fanning Wood. This is a matter of pride and gratification to this Society.

There is perhaps not an hour of the day where fellow-physician or former patient does not quote Doctor Wood. His advice continues to guide and bless.

We, the doctors of North Carolina, mourn the loss of this splendid, scholarly physician. We loved him, and admired him, and we shall always miss him.

"To live in hearts we leave behind is not to die."

Dr. L. B. McBrayer moved that in addition to the eulogies presented at this Session, the Secretary be authorized to add any that may be turned in before the transactions go to press. This motion was seconded and carried.

Dr. Sikes: I do really feel that this is one of the most important hours that comes in our meeting together in this State Medical Society. I have been in the Society long enough to be acquainted with nearly all of the men whose names you have heard read tonight, and some of them I have been very closely associated with. I feel that we should like our successors to notice that we had more than a passing consideration for our friends who walked with us and who have gone on before us.

My friend, Dr. Braswell, to whom you referred, was a high toned Christian gentleman. I read of his death last week. I do not know when I have ever read an obituary that spoke more highly and nobly than the author did of Dr. Braswell. I wish we could in some manner express to our friends and loved ones following on that we entertain for them something like the feeling that the world entertains today for the grave and burial place of the Unknown Soldier. They were soldiers; they fought their fight bravely; they did their part well. I should like to throw a mantle of charity on the shoulders of those whose names were read tonight. This may be my last time here, I do not know; I am getting along in years and do not know whether I shall be here next time, and I should like to avail myself of the opportunity of saying just these few words while I am with you and able to say them.

DR. THOS. ELI ANDERSON

(Semi-centennial Oration)

Like the old hardshell Baptist preacher, I do not like written out speeches which he said disclosed to the devil what you are going to say, while speaking as he did without notes, his efforts only known to himself and God, who would not disclose it.

This meeting today completes my cycle of fifty years for it was at this place in this month 1879, that I joined this Society. Coming, a young shrinking newly fledged M.D., with many reservations as to the living, and positive fears of the dead, especially that contingent facilitated to the shades by my wabbling anons. At that, to me memorable meeting, Dr. Charles Duffy, Jr., was president, and that handsome, winsome man, Dr. L. J. Picot, was secretary. What inroads that arch enemy has made on those lines. We could hold a vast meeting under the shade of the trees by the river of life with that vanished company. Of those peerless men, how easily do I recall Dr. Marcellus Whitehead, who honored me by taking me under his wing. Dr. Joe Graham, Dr. Henry T. Bahnson, the

two Doctors Payne, J. K. Hall, D. Eugene Grissom, Thos. F. Wood with his alert handsome face. The Doctors Faison, Pat L. Murphy, Richard H. Lewis, S. S. Satchwell, the noblest Roman of them all, Dr. Chas. J. O'Hagan, who left as his hostage his gifted grandson, Dr. Chas. J. O'Hagan Laughinghouse, now our able State Health Officer.

Unlike Spartacus, who said in his notable speech in radiant sarcasm, "Oh, Rome! thou hast been a tender nurse to me." I can truly say to the North Carolina Medical Society, thou hast nourished me most tenderly and charitably, blinded to my limitations and crudities thou hast entrusted me with all your honors.

With profound gratitude, there courses up and down the column which supports my frame a feeling of real humility in the light of your honors and concessions as compared with my contributions to your splendid career. I can only say as Washington Irving said in reviewing his life, "I have no wife and children. I have merely been an observer of other men's adventures." I can only claim to have been an observer and constant witness of your climb to eminence.

Though I fly, though I stumble, this Society holds my life and soul.

Dr. McBrayer: I feel with the Chairman and others who have spent this evening here, that it is as little as our Society can do to pause for a sufficient length of time to honor those who have fallen as we go along, and I wish that there were enough members sufficiently like minded that we might have several hundred here this evening instead of the few dozen who have shown interest and have come out. It seems to me, however, as the Chairman knows, a rather difficult proposition to get the membership to attend the session for eulogy on those who have departed during the year. I rather liked the little exercise this morning as far as it went, but nothing can take the place of a meeting such as this ought to be. I personally appreciate the presence of those who have come and the remarks that have been made in the papers that were read. The Obituary Committee, particularly its Chairman, who has presided this evening, has done a very faithful work during the year, and I do not think the passing of any physician has been overlooked. It is always a pleasure to cooperate with Dr. Van Poole in this matter, and I do not know of anything from which I get more pleasure than the correspondence with him during the year in regard to it. I should be glad to have suggestions from any of you about the memorial service for next year.

The General Session then adjourned.

THIRD GENERAL SESSION

WEDNESDAY MORNING, APRIL 17, 1929

The Third General Session of the Medical Society of the State of North Carolina convened in the Ballroom of the O. Henry Hotel, Greensboro, North Carolina, at 9:30 o'clock.

Dr. A. B. Holmes, delegated to preside over this session, arrived and assumed the chair.

Dr. Templeton: Mr. Chairman, at the last meeting of this body a resolution was passed instructing the President to appoint a committee to go before the Legislature to consider the matter of the appropriation for health work. The State Farmers' Union passed the same kind of a resolution and appointed a committee. I wish to inquire, sir, whether our President has appointed that committee and what they have done in regard to it.

Secretary-McBrayer: I am glad to state that the Secretary certified the action of the State Medical Society on that matter and another action along health lines to the Governor, the present Governor, and to the Budget Commission. The President did not appoint a committee, so far as I know.

Dr. J. M. Templeton, (Cary): I would like to know by what right he ignores the instructions of this body. They are his creator and he is responsible to them and when they instruct him to do a work, he ought to do it.

I was appointed on a committee by the Farmers' Union to cooperate with this committee, but I was reluctant to do it because I couldn't find any committee from the Medical Society and I didn't like the idea of the farmers stepping in ahead of the medical profession in health work. That is the reason I didn't do it.

Chairman Holmes: The first thing on our program this morning is an address from the Section on Public Health by Dr. W. A. McPhaul, who isn't here.

Next is an address from the Section on Eye, Ear, Nose and Throat, "Optic Neuritis, Due to Salvarsan," by Dr. C. W. Banner, of Greensboro.

OPTIC NEURITIS DUE TO SALVARSAN

By C. W. Banner, Greensboro

The indiscriminate and almost universal use of the arsenicals in the treatment of syphilitic effections, and used by some not well prepared or properly trained in their administration, has given rise to many complications and sequelae in these cases; and it is the observation of a few of these unfortunate cases that has prompted me to write this paper, and to sound a note of caution to those who use these drugs so indiscriminately.

Arsenic has been used in medicine for very many years, and the text books have never failed to point out the dangers attending its administration, but it seems to me that we, of this generation, have become overbold in our use of the arsenicals and rather indifferent to the dangers that may attend their use.

That the arsenicals have a special affinity for certain protozoa, and among these the spirochaeta, seems assured and their value in the treatment of syphilis is unquestioned; but we should recognize that we are

dealing with a powerful drug, that must be used with the greatest precaution and must realize that there are certain contraindications to their use that must be respected. Their mode of action has never been well understood. Some things we do know, however: That they have a selective toxicity for protozoa including the spirochaeta. That they may and often do produce myelitis and neuritis; indeed these are the first symptoms to attract our attention in chronic arsenical poisoning. That they involve the nerve trunks, and that peripheral neuritis is common in cases of arsenical poisoning. They affect the nervous system and usually affect the central motor nerves before the spinal nerves.

We must not forget that even the organic preparations, salvarsan and neosalvarsan, may cause neuritis of the optic and the auditory nerves, and it was observation of several cases of *optic neuritis* that seemed to me directly attributable to the use of these drugs that prompted me to report these cases.

I recall the case of a young girl seventeen years of age, with a history of hereditary syphilis and with a three plus Wassermann, who was sent to me some time ago for treatment of an eye that had almost suddenly lost its sight. Examination showed a rather advanced case of optic neuritis, vision reduced to counting fingers at about ten inches; cornea was hazy, vitreous filled with fine floating opacities and deposits in Descemet's Membrane; and there was a distinct swelling of disc, its outlines hazy and veins tortuous. She had been given six doses of salvarsan and vision had grown progressively worse after each dose, and the other eye was also beginning to be affected. I conferred with her physician and at my request he stopped the arsenical and we put her on mercury and iodides. Her vision commenced to improve immediately, and in a few weeks had gotten back to about 20/30ths. Her physician, seeing that her eyes were almost back to normal, decided to again try the salvarsan and after the second dose the left eye was again reduced to light perception. Again we stopped the salvarsan and put her back on the mercury and iodides and her vision returned, this time to full 20/20 and she was able to attend college where she later graduated with honors. I have seen her from time to time and she has had no further return of her trouble.

I have seen a number of these cases in the past few years, but none of them that resulted quite so happily as in the above case; in fact, I have seen several in which atrophy of the optic nerve had already taken place and of course nothing could be done. I know that some are going to say that it was the disease and not the remedy that caused the neuritis, but how are we to account for the fact that in all these cases, where atrophy of the nerve has not already taken place, that improvement of vision practically always follows on stopping the remedy and substituting mercury and iodides?

I do not mean to leave the impression that I think optic neuritis is a very frequent complication following the administration of the arsenicals but I do know that it occurs with sufficient frequency that we should be

on our guard and watch for any eye symptoms, such as photophobia, temporary loss of sight in an eye, flashes of light, redness of conjunctiva, haziness of cornea, dimunition of sight and reduced field of vision, and should have the eyegrounds examined for beginning neuritis in any case where any of these symptoms occur and if beginning neuritis is found we should at once discontinue the arsenicals and substitute the old standbys, Hg. and K. I.

A splendid paper on this subject was recently contributed by Dr. G. N. Hosford,[1] in which he reports the following case:

A man of 25, whom he had refracted two months before, came to him with a history of blurring of vision, which had occurred rather suddenly. The author had noted, when he first examined him, an extensive disseminated choroiditis which had involved the right macular region and had missed the left macular region by a fraction of a millimeter. His vision with his correction was 0.2 in the right eye, and normal in the left. The disease process was obviously of long standing. The patient was an ignorant workman and would not undergo the extensive examination which is often necessary to determine the cause of such a condition. The author felt that the damage had been done, so merely refracted him. When he returned the author expected to find an exacerbation of his choroiditis, but instead he had numerous very minute deposits on Descemet's membrane in both eyes, and his optic nerves and the adjacent retina were edematous and slightly hyperemic.

In the two-month interval, between the time when he was refracted and his second visit, he had acquired a chancre. He had gone immediately to a doctor, and the doctor had instituted treatment. When the author saw him with his optic neuritis he had received four doses of neosalvarsan and was having daily mercurial inunctions.

Now the question arose, "Was the neuritis due to the syphilis or to the neosalvarsan?"

In this patient, improvement in the optic neuritis was observed within two weeks after the neoarsphenamine was discontinued. Within six weeks all signs of the inflammation had disappeared. His antiluetic treatment was continued with mercury and bismuth, and the author felt that his course in stopping the arsenical was probably correct.

In the discussion of this paper Lloyd Mills, M.D., reported the following: Several years ago a physician came to me with a story of a minor incision of a finger occurring during an operation on a syphilitic patient. He gave this wound immediate attention, no local lesion developed, and repeated Wassermanns were negative. In spite of this he developed a definite and increasing syphilophobia. To allay his fears he went to a number of physicians and pleaded for a protective course of salvarsan from each on preventive grounds, stressing his psychic need.

I saw him after about two years of treatment and found a hemorrhagic neuroretinitis. The inevitable outcome was explained to him and

every attempt was made to deter him from further treatment, but he persisted and when last seen was blind from total arsenical atrophy of both optic nerves and central degeneration.

A second case of cured syphilis, with negative Wassermanns for several years, was treated with neoarsphenamine every three months. Each injection was followed, in the eye having a posterior polar cataract, by a definite inflammation of the optic nerve which gradually began to whiten. These treatments were concealed until the man was obliged to disclose his history or go elsewhere. Improvement in the ocular condition followed and has been maintained since discontinuing these needless injections.

Milton B. Lennon, M.D., discussing Doctor Hosford's paper, calls attention to a question that was first mooted shortly after Ehrlich had introduced salvarsan, a question that has not been fully answered even today.

That an optic neuritis can and does occur in the early stages of syphilis is indisputable—that it is a frequent accompaniment of late syphilis, particularly of the cerebral forms, has long since been recognized. Salvarsan and its various offsprings have increased the incidence of optic neuritis by a small percentage. This may be due either to its direct influence or by its freeing neurotoxins. The Herzheimer reaction is well recognized and is usually the result of using a small, almost tentative dose of salvarsan. A second generous dose will, as a rule, clear up the situation. Since this reaction is usually noted in patients beyond the early days of syphilis, it can be avoided by giving a preliminary course with mercury and iodides, and in generous doses. These invaluable remedies have been pushed too much aside since the introduction of salvarsan, and by many their true and extraordinary values are hardly recognized. They may not attack the spirochaetes with the valor of the salvarsan, but they can break down the products of syphilis whether these be arteritic, meningitis, or gummatous, in a way that salvarsan is in no way calculated to do.

Lovell Langstroth, M.D., further discussing this paper, said: "The fundamental problem behind this question is just why a small percentage of patients treated with salvarsan preparations develops optic neuritis. Syphilitic infection may bear no relation to it at all. In fact, since the great proportion of syphilitics escape it seems possible that it is not a question of liberation of syphilitic toxins at all but entirely a reaction between this drug and certain susceptible persons. We have no accurate knowledge of the tissue qualities which make for this susceptibility, but from the frequency with which we find degenerative processes in the cardiovascular, locomotor and nervous systems of supposedly normal persons we may presume that degeneration is half the story. Persons with degenerative changes or with lowered resistance to infection stand strain very badly. In the case of Doctor Hosford's patient the marked choroiditis which antedated the syphilitic infection was perhaps a sign that this particular individual would not tolerate salvarsan."

The ocular manifestation of syphilis have interested all practicing physicians for years, and in going through the literature one finds, in the reports of societies, whole sessions devoted to the discussions of ocular lues. These reports begin to have a particular interest about the year 1910, when salvarsan was introduced by Ehrlich.

The section of the British Medical Association devoted a session of its 1912 meeting to the consideration of lues of the eye and its treatment by salvarsan. There were a number of carefully prepared papers on various phases of the subject, and much earnest discussion.

Doctor Walker[2] of Liverpool had seen several cases of optic neuritis following the administration of salvarsan and admitted frankly that he did not know whether the neuritis was due to the disease or the drug. He cautioned his colleagues not to forget principles and to remember their experiences with atoxyl. Blindness from atoxyl was not reported until two years after the introduction of the drug and then, within a few months, over two hundred cases were reported in the literature by different workers.

In 1913 the St. Louis Medical Society held a symposium on ocular syphilis. One paper by William F. Hardy reports two cases and refers to a third treated by another oculist. In the first case a very violent bilateral neuroretinitis occurred four weeks after an injection of salvarsan. The neuroretinitis was attributed to the lues and another salvarsan given. The disease progressed from bad to worse, and the patient became blind. A second case received one injection. Three months later the patient developed a neuroretinitis and iridocyclitis. Inunctions and local treatment were ordered and the condition improved under these measures. The result, however, was practical blindness, as it was also in a third case.

He admits, as anyone would, that the salvarsan may have had nothing to do with these unfortunate results, particularly in the second and third cases. Such things may happen under mercury alone. A hitherto well eye may become inflamed, while a similar process is subsiding in the other eye, with the patient thoroughly mercurialized at the time.

On the other hand, in the same meeting John Green, quotes a German report, where 63 per cent of seventy-six cases of neuroretinitis had a rapid and satisfactory result. Ehrlich himself, however, warned against the use of salvarsan in any patient who showed signs of optic neuritis, and it was some time before the ophthalmologists ventured to use it in such cases. Green concludes that when such lesions are certainly luetic salvarsan is indicated, although the best results are obtained when the drug is combined with mercury and iodides.

The report of the discussion of the treatment of syphilitic eye lesions by the Ophthalmological Society of the United Kingdom occupies fifty pages of their transactions in the year 1916.

On the question of salvarsan and optic neuritis J. B. Lawford[3] quotes from a monograph by Dor the following evidence: "In records published from 1850 to 1911 he found five cases of severe papillitis and gumma of

the optic papilla; between 1911, the year following the introduction of salvarsan, and 1914, he found ten." Wernicke gives the following facts: "In 1912 a death occurred in Odessa, following the administration of salvarsan. This led to a temporary abandonment of the drug by the medical men of the town. They reverted to mercurial treatment alone. During the twelve months, in 1911 and 1912, while salvarsan was in use, he had referred to him ten cases of acute optic neuritis in syphilitics treated with the drug. In the subsequent twelve months, while the drug was not in use, not a single case came under his observation.

I am not unaware that there is a difference of opinion among authors along this line. Fuch's Text Book, as translated by Duane, advises that the neuritis is not due to the arsenicals but to a direct invasion of the optic nerve by spirochaeta, and advises increasing the dose of the salvarsan, but winds up by advising that you also use mercury in conjunction with the arsenical as a preventive of neuritis.

The cases that I have seen would not justify me in so advising, and if one of your patients lost his eyesight, following these doses of salvarsan, after eye symptoms had developed, I believe you could not help but feel that perhaps you had contributed to the disaster.

While the organic preparations are less toxic than the inorganic, I think it is generally agreed that they are not without danger to the optic nerve and especially so in those cases with a preexisting lesion either of the nerve or its adnexia.

I am well aware that in the large majority of cases of syphilis, salvarsan and neosalvarsan, properly administered, are without toxicity to the optic nerve, but we do find a certain percentage of cases that seem to have a susceptibility to the drug, and it is in these cases that we should be on the alert for and recognize beginning changes before permanent damage has been done.

The sparsity of the literature on this subject is my excuse for reporting my rather limited observations on this subject, and in closing I just want to add the following:

SUMMARY

1. That while the arsenicals are not a very frequent cause of optic neuritis, that it does cause it in some cases.

2. That in giving the arsenicals we are administering a very powerful drug whose action is not fully understood.

3. That this drug frequently affects the optic and auditory nerves more quickly and to a greater degree than it does other nerves of the body.

4. That in any case where the arsenicals are being used we should be on the lookout for any of the eye symptoms above enumerated and, if they occur, the arsenical should be stopped, and the eyegrounds examined by a competent oculist.

5. In any case showing any degree of optic neuritis, the arsenicals should at once be discontinued and mercury and iodides be substituted in the treatment.

6. Patients with nephritis, diabetes melitis, myocarditis, etc., seem especially susceptible to these lesions of optic and auditory nerve.

REFERENCES

1. Calif. & West Med. J. 1927. xxvii. 798-800.
2. Transaction of British Med. Association, 1912.
3. Transaction St. Louis Med. Sec., 1913.
4. Transaction of Opth. Sec. of United Kingdom, 1916.

DISCUSSION

Dr. J. M. Templeton, (Cary): Mr. Chairman, I would like to ask Dr. Banner a question. I don't know about this, I never heard much of it until yesterday. Did you ever try this neosodium-creosulphate in that form of metallic poisoning? The gentlemen who reported on that yesterday were very optimistic in regard to its effects. I am a little pessimistic myself and I would like to hear some more.

Dr. C. W. Banner, (Greensboro), closing discussion: I am unable to answer the Doctor.

Chairman Holmes: The next thing on our program is an address by Dr. Patterson, of Philadelphia. We are all very sorry he can't be here.

Dr. J. A. Morris, will you take the chair, please?

Dr. Morris took the chair.

Chairman Morris: Next on the program is an address by Dr. A. B. Holmes, of Fairmont, from the Section on Chemistry, Materia Medica and Therapeutics, on the subject, "Treatment of Uremia."

TREATMENT OF UREMIA

By Dr. A. Byron Holmes, Fairmont, North Carolina

The conditions included in the term uremia are very complex, having symptoms diverse alike in mode of onset, etiology and pathology, and having but one thing in common—their occurrence during the course of renal disease and in conditions causing anuria.

If our work be general practice or one of the specialties, we are constantly confronted with the dreaded symptom-complex known as uremia. Uremia may be defined as a passing or permanent failure in one or more of the kidney functions. It is obvious that to properly understand the treatment of uremia necessitates some knowledge in regard to its etiology, pathology and symptomatology.

We divide uremia into two groups:[1] (1) an acute type, with convulsions occurring mainly in acute nephritis, and (2) a chronic type the usual mode of termination in chronic nephritis, indicating a kidney damaged beyond all hope of repair. There is a condition which resembles chronic uremia in some of its symptoms, but shows no evidence of kidney disease and has a normal blood nitrogen, very probably due to the effect

of continued hypertension which is sometimes unwisely called "pseudo-uremia." The treatment of this condition is that of hypertension, not uremia.

Acute convulsive uremia is a complication of acute glomerulo-tubular nephritis and occasionally chronic nephrosis. Since evidence of nitrogen retention in anything but a moderate degree is lacking, the condition is not strictly uremia but perhaps represents the cerebral symptoms of acute nephritis. L. Traube,[2] several years ago, advanced the theory that the symptoms were very probably due to the compression of the brain against the rigid cranial wall due to the cerebral edema. This theory has been discarded until recently. Always associated with it is a rising blood pressure, whose relationship to cerebral compression has been shown in the experimental work of Cushing,[3] and reported clinically by Hamilton and Blackfan.[4] The edema of the brain as suggested by these observations is an essential factor in this type of uremia. A rapid encroachment on the intracranial space from the increasing cerebral edema results in a steady increase of intracranial pressure, which in turn initiates the vomiting, headache, convulsions and other symptoms. The arterial tension increases correspondingly being governed by the vasomotor mechanism to keep the arterial tension in excess of the compressing force against the arterioles and capillary vessels in the medulla. Convulsions are the classical symptoms of this type of uremia, but milder forms are seen, such as vomiting, headaches, sudden blindness, localized paralysis or hemiplegia, hemianopsia, hallucinations, delirium and acute mania.

Acute convulsive uremia is a medical emergency that demands immediate and heroic treatment. A prodromal stage during which the blood pressure is rising is a valuable indication for treatment. The removal of from ten to twenty ounces of blood is a treatment of proved worth, and should be resorted to without delay, either as a preventive measure for the rising blood pressure or after convulsions have occurred.

The most effective treatment, also, one bearing out the theory of increased intracranial pressure, is the intravenous injection of magnesium sulphate solution. A ten per cent solution is very slowly injected, in amounts equal to about two c.cm. per kilo. of body weight. The injection is repeated as often as the condition requires. This treatment is usually followed by prompt fall of the blood pressure with lessened intracranial tension and subsidence of the cerebral symptoms.

Lumbar puncture is of great value, but being attended with the danger of medullary pressure must not be undertaken without full precautions and realization of this danger.

Drugs may be used to aid and supplement the results obtained by the above methods. Choice of these are chloral hydrate, the bromides and the judicious use of morphine. Headache and vomiting are due to the increased intracranial tension and usually respond rapidly to methods already described.

The diet and general management of the cases are part of the treatment of the nephritis. The edema, if present, is due to a disturbance in the salt balance, and will very often promptly disappear following the injection of merbaphen and the administration of large doses of ammonium chloride by mouth. The aim in the treatment of acute uremia should be the prevention of convulsions by recognizing the significance of a rising blood pressure and taking prompt measures for its reduction.

True chronic uremia is the final act in chronic glomerulo-tubular nephritis, and is its most frequent mode of termination. Whatever the cause may be, the diagnosis and treatment of kidney disease, whether primary, corollary or secondary, rests upon the evidence of damage done the kidney parenchyma. The condition of the kidney parenchyma during or after an attack of nephritis stands in the same relation to the prognosis and treatment for the individual as does the condition of the heart muscle during or after an attack of carditis, vascular disease or hypertension.

The amount and specific gravity of the urine specimen formed during the usual twenty-four hour period, or under imposed conditions of moderate water restriction is the best renal function test. The balance or excretion test is universally used. The urea test of McLean and the dyes are the best known. While the excretion test is valuable, especially if we carefully ascertain the time of the peak of the excretion curve, the determination of nitrogen retention in the blood is the most valuable.

The presence of albumen, blood and casts in the urine are important, for when these findings are correlated with the concentration test, excretion test and nitrogen retention, it is possible to form some idea of the severity and extent of the lesions which have caused a lessened function.

In 1833 Wilson[5] advanced the theory that urea was the responsible toxic substance in the etiology of true chronic uremia. Urea has been regarded until quite recently as of little more than historical importance, but we must revise our ideas and accord to urea a more important role than that of a harmless waste product. The experimental work of Hewlett, Gilbert, and Wickett[6] has demonstrated the toxicity of urea. They were able to produce symptoms of chronic uremia in healthy men by administering urea by mouth to them. In these experiments symptoms of chronic uremia appeared when the blood concentration of urea reached a level of one hundred and sixty to two hundred and forty-five mg. urea to one hundred c.cm. of blood. Leiter[7] by the intravenous injection of urea into dogs produced similar symptoms, death occurring from convulsions when the amount injected had reached one per cent of the animal's weight in grams.

Determination of the retention of nonprotein nitrogen in the blood is very important. Sometimes we will find retention of creatinine while the urea level is still normal, but more often urea retention is more helpful. We are thus enabled to determine whether treatment will be of much benefit. If the urea nitrogen is increased to sixteen to sixty mg. per 100 c.c. of

blood, treatment should be successful: those patients who have one hundred to two hundred mg. per 100 c.c. of blood rarely live more than one year: those having two to three hundred mg. per 100 c.c. of blood rarely live more than a few months: those having more than three hundred mg. urea nitrogen per 100 c.c. of blood rarely live more than a few weeks.

The clinical symptoms of chronic uremia appear insidiously and tend to assert themselves when one hundred and fifty mg. or more of urea per 100 c.c. of blood has been reached. When once established the course is progressive, though temporary remissions may occasionally delay the fatal termination. Treatment is very unsatisfactory because we know of nothing to stay the inevitable end, but by anticipation and careful treatment of outstanding symptoms valuable service may be rendered in the patient's latter years.

In the majority of cases digestive symptoms are among the earliest to assert themselves and represent the so-called gastro-intestinal type of uremia. The mouth should be kept clean by the frequent use of alkaline washes and the removal of debris from the teeth and gums to prevent stomatitis. Nausea and vomiting causes quite a bit of discomfort. Gastric sedatives, such as cerium oxalate, dilute hydrocyanic acid and bismuth-liquor, adrenaline hydrochloride, and minim doses of iodine are useful; in stubborn cases cocaine hydrochloride grain one-fifth in eight c.c. of chloroform water may give relief. Gastric lavage is often the most effective treatment.

Constipation, often an annoying symptom, is best treated by frequent large doses of the salines. Sometimes a very troublesome and fatal diarrhea will demand the use of astringents with opium.

Hiccoughs is of grave import and proves very resistant to treatment. Stimulating applications to the epigastrium, such as fomentations of mustard leaves, should be tried; nitroglycerine grain one-hundredth, drachm doses of fluid extract of ergot and carminatives, such as oil of turpentine ten minims in capsule will occasionally be helpful. The symptom is usually a terminal one and there is no good reason to withhold morphine.

Paroxysmal dyspnea, the so-called uremic asthma, is frequently a prominent symptom. It is thought to be due to acidosis. Drachm doses of sodium bicarbonate every three or four hours may prove useful. Inhalations of oxygen are beneficial. The most certain relief is the injection of morphine.

Itching of the skin which is very terrifying is best treated by the frequent use of warm alkaline baths and sedative drugs, such as bromides in full doses. The use of the different methods of diaphoresis to eliminate the toxins through the skin is not to be recommended. It adds to the patient's weakness and discomfort and does no good.

The nervous symptoms consisting of depression and irritation are often marked. Mental depression is often extreme and there may be increasing lethargy passing into coma. Irritation seen in the twitching of muscles and

cramps, in restlessness, delirium and sometimes mania. Chloral hydrate grains five to fifteen with fifteen grains of bromide is useful, but morphine is the drug of drugs and if its use be properly supervised it may be used without undue risk.[9]

Headache can usually be relieved by aspirin, phenacetine or the like. If these fail, especially if there is elevated blood pressure venesection should be done or the injection of ten per cent solution of magnesium sulphate. Convulsions are rarely met with in chronic uremia but may occur in the terminal stage and should be treated along similar lines.

The mode of treatment that has given the best results in my hands, in both the acute and chronic types, has been the duodenal tube. For those patients who will not or cannot take the proper amounts of fluids, nourishment and medication we can introduce the tube through the nose and leave in situ until we have accomplished our purpose. The liver being the organ of detoxication of first importance it follows that anything to enhance liver function is beneficial. Lyon[10] presents evidence to show that drainage of the gall bladder improves liver function. The concentration of nitrogen in the bile depends upon its concentration in the blood. The bile being rich in nitrogenous waste products we are enabled by biliary drainage to entirely remove these products from the body. After complete duodenal drainage, we lower the tip of the tube into the jejunum and first give a massive lavage. Ten to fifteen litres of fluids can be given without undue discomfort. Following the lavage we get evacuation of large volumes of liquid feces. It is known that more nitrogenous waste is eliminated in liquid than in solid feces. There will be a complete change in the feces: they will lose the odor of protein putrifaction and assume a nearer normal condition. After evacuation is complete we then introduce the proper amount of food to maintain the nitrogen equilibrium. Peptonized milk with glucose or lactose is the best food for this purpose. A high carbohydrate intake is desirable because it is a body protein sparer, and adds to the liver store of glycogen, thus boosting liver function. The carbohydrates also tend to prevent acidosis and the milk will furnish calcium which is very essential because there is practically no calcium storage in the adult. We are also enabled to maintain the acid base balance of the blood by introducing alkalies. This treatment will usually cause a lowering of the nitrogen retention probably because the excretions in the small intestine are not reabsorbed in the large intestine.[11]

I would suggest that we leave off the drugs known as diuretics. Their action on the kidney is first stimulation followed by exhaustion. I have never seen them do any permanent good, but think I have seen some harmful results following their use.

We know nothing definite about the toxin or toxins responsible for the symptoms of true uremia, but we know they are associated with the retention of waste products of nitrogenous metabolism in the blood and the inability of the kidneys to concentrate; further, that with the retention of these products the symptoms of uremia may be prevented for a long

time by compensatory polyuria. The main indications are to lower and maintain as nearly as possible the normal level of the end products of nitrogenous metabolism, represented by the nonprotein nitrogen in the blood, and to maintain the compensatory polyuria. The first indication may be met by lowering the nitrogen intake and sparing the body proteins by a high carbohydrate intake. The second indication is met by increasing the fluid intake and success here will depend upon amount of kidney reserve strength left.

The increase in the number of cases of cardio-renal disease during the last few years should put us on our guard to try and diagnose a beginning uremia before the disease is permanently established.

The treatment of pure chronic uremia is purely symptomatic and our end is gained if the sufferings of this lingering disease are in some measure lessened.

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DISCUSSION

Chairman Morris: Discussion of this paper will be led by Dr. E. S. Bullock, of Wilmington, North Carolina. Is Dr. Bullock present? (No response.) The paper is open for general discussion.

Dr. J. M. Northington, (Charlotte): Mr. Chairman, I had the privilege of reading Dr. Holmes' excellent paper some weeks ago and I wish here to just say a word of praise of this excellent work and to repeat the thing which I never tire of repeating, that the size of the man is not at all determined by the size of the town in which he practices. The treatment of uremia, which he has outlined, undoubtedly, is an excellent one. I would like to add to it the highly efficacious old treatment, particularly in acute uremia and most particularly in nephritis, that of copious blood-letting. Of course, the subject of treatment of chronic uremia is really mixed with that of chronic nephritis, because almost always it is due to a chronic nephritis. That brings up the matter of whether the chronic nephritis really is a nephritis in the sense of being an inflammatory process. The general tendency at the present time is to consider the term nephritis

as covering a larger subject, that is, the reaction of the kidney to an injury of any kind or any chronic or frequently repeated injuries.

Some years ago, as you will all recall, there was a tendency to do away with the term nephritis because it was unsatisfactory and nephrosis was used as a substitute for the term nephritides. Fortunately, I think, that tendency has largely passed under the leadership of such men as Christian of Boston. It is very encouraging at the present time to see that Christian gives a very simple classification from a clinical viewpoint of the nephritides. He classifies these as acute nephritis, as subacute nephritis with edema, subacute hemorrhagic nephritis. It is very pleasing to see that in classifying the chronic nephritides, he uses only two classifications, very simple ones, that of chronic nephritis with edema and chronic nephritis without edema. There is a reason for this. He states that it is impossible with any degree of accuracy to determine during life from the symptoms what changes will be found in the kidney at postmortem. That is not encouraging in the sense of being able to do absolutely scientific medicine, but it is very encouraging from the standpoint of treatment that we know what we cannot do and, therefore, will not undertake to do the impossible.

As Dr. Holmes has so well said, the treatment is largely dietetic and the administration of a large amount of water, and his suggestion that when it cannot be readily administered by mouth that the duodenal tube remaining in position offers a very ready method of supplying the patient with the much needed water, is a good one.

Another point I would emphasize is that the dietetic treatment is of great consequence and when the patient will not take or has not sufficient apetite and cannot be induced to take what we assume to be the best diet for him, he should not be allowed to become weakened because of fear of injuring him by giving him articles of food which we do not think the best for him. He had better take almost any kind of food that he will take to satisfy his caloric requirements, rather than to become starved. (Applause.)

Dr. J. M. Templeton, (Cary): Mr. Chairman, I did'nt hear the Doctor say anything about this, maybe he did, but when I began to practice medicine, a case of that kind was sweated pretty heavily. If it was summer time, we would boil roasting ears and put them in the bed with the patient and then we would bleed them and give them a good big dose of morphine and I have seen, I think, some benefit from hypodermic injections of veratrum viride. I don't know why it helps them, but sometimes it brings down the pulse and they get better.

I have been wondering lately, within the last year or two, about this: I have been using in epilepsy a treatment that was new to me, that is permanganate of potash. I have been using it as an enema in some cases and it seemed to help them. I had made up my mind if I had any more cases of uremia, (I haven't had any lately) I would try it on the uremic convulsions. I don't know whether it would do any good or not, but there

are a great many things in our profession that are empirical and we can't account for them. I think the sweating, though, is an important part of it.

Dr. A. B. Holmes, (Fairmont), closing discussion: Answering Dr. Templeton in regard to the sweating, I think in acute uremia sweating is all right. I have found in the chronic type that it only adds to the patient's discomfort and doesn't do any good. In place of the drugs for lowering the blood pressure, I have been using blood letting. I think it is more efficacious and I think we get better results from it. Thank you. (Applause.)

Dr. Holmes resumed the chair.

Chairman Holmes: The next paper on our program is an address from the Section on Surgery, "The Diagnosis and Treatment of Acute Intestinal Obstruction Involving the Small Intestine," by Dr. B. C. Willis, of Rocky Mount.

Dr. B. C. Willis: Members of the North Carolina State Society, I have a paper written simply about the experience that I have had in small bowel obstruction. I did not feel that I could condense the modern findings in intestinal obstruction to twenty minutes and give my experience at the same time, so I chose the actual experience rather than the theory about obstruction.

THE DIAGNOSIS AND TREATMENT OF ACUTE INTESTINAL OBSTRUCTION INVOLVING THE SMALL INTESTINE

By Byrd Charles Willis, M.D., F.A.C.S.
Park View Hospital, Rocky Mount, N. C.

This paper is limited to the consideration of acute small bowel obstruction, the early diagnosis of which is of great importance in saving human life.

Haggard[1] quoting Sir William Taylor, states: "The mortality in primary acute intestinal obstruction is nearer 60 per cent than it is 35 or 40 per cent, as usually given." The cause, type, or location of obstruction in small bowel, whether simple or strangulated, seem to make little difference in the symptoms, but does influence the rapidity and gravity of the disease. The early symptoms that should lead to a probable diagnosis are abdominal pain, nausea, vomiting, prostration, early pulse and temperature normal, temperature sometimes subnormal. The pain may follow a period of discomfort and general depression. The character of the pain is of great importance. Peristaltic pains are rhythmic, increasing in intensity and coming at regular intervals, with short periods of relief for the first twelve or twenty-four hours, when paresis may set in, pains gradually disappearing, followed by abdominal distension, periodic vomiting, cold, leaky skin, rapid and weak pulse. The pain is usually around the umbilicus or epigastrium. With epigastric pain, we realize the importance of ruling out coronary disease in patients above 40 years and have it differentiated when necessary by an electrocardiogram. Nausea is very transient and is

of less significance than vomiting. The first vomiting is projectile, with rapid emptying of stomach contents, and unless fluids are withheld, bile, followed by stercoraceous material, is expelled. The extent of prostration depends upon the amount of vomiting, violence of pain, and the presence of actual strangulation with vascular disturbance. The important matter is to recognize the obstruction, withhold devastating purges and seek early operative relief. The text books give a very full symptomatology, and when all of these are present the patient is in extremis. It is important to know the early signs of intestinal obstruction. The triad of obstipation, vomiting, and rhythmic abdominal pains is sufficient to base an early diagnosis, especially in a patient previously operated upon abdominally or who has an old hernia. The vomiting and the colicky abdominal pains should excite suspicion; repeated enemas, two or three, the last two without results, confirm the diagnosis. It is a pity that enemas cannot be popularized and given in pill form with as much ease as are purges, for thereby the mortality in acute abdominal diseases would be greatly reduced. It is better to explore an abdomen and find it negative than not to explore and find obstruction at autopsy.

Dr. C. T. Smith, of Park View Hospital, in a recent paper before the Fourth District Medical Society, summarizes the urine and blood findings in obstruction as follows: "The presence of albumen, casts, and blood in the urine are fairly constant findings in acute intestinal obstructions. The blood urea will increase after twenty-four hours, and a persistent rise makes the prognosis grave. The total leucocyte count is apt to be misleading. The differential polymorphonuclear count is more reliable." He further states, "The temperature, pulse, and blood pressure form no criterion as to the illness of the patient or his chance of possible surgical recovery."

In the past fifteen years 134 patients suffering with acute small bowel intestinal obstruction have been admitted to Park View Hospital to the service of Drs. Boice and Willis and operated upon by both or one of them. It is more imperative to operate upon these patients as soon as the diagnosis is made than in acute appendicitis; many were done around and after midnight. Twenty-two, 16 per cent, of these died following operation, two of them, on the operating table. None were denied operation no matter how desperate the condition. We have further divided the deaths into institutional, in the hospital 48 hours, and non-institutional, under 48 hours. Fourteen died after 48 hours (institutional deaths) and eight, under 48 hours (non-institutional deaths). Forty-two of these patients were enterostomized, and among these 17 of the deaths occurred. The high death rate in this class of case is probably due to their more desperate condition. Six had simple enterostomy with aspiration of bowel content and immediate closure of opening in bowel. One of these died.

The immediate anatomical cause of the obstruction was a band or bands in 39, adhesions in 31, intussusception in 3, femoral hernia in 7, inguinal hernia in 46, paresis in 2, stricture perforation in 2, simple stric-

ture 1, caught in appendix abscess wall 3. Fifty-seven of these 134 patients had been operated upon abdominally; 43 of the 57 had been operated upon from months to years previously and fourteen were still in the hospital when the obstruction developed. Nearly 42 per cent had been operated upon abdominally. Ninety-six, 71 per cent of these 134 obstruction cases had either been operated upon abdominally or had herniae, the latter containing partially strangulated small bowel. There were three deaths among the 46 incarcerated small bowel inguinal herniae, and one death in the seven femoral herniae. The mortality was 7½ per cent in the inguinal and femoral hernia patients. In ten patients it was necessary to resect or repair the bowel.

It is difficult to say definitely just when complete obstruction takes place in any patient. Symptoms may be present but obstruction not occur for many hours after onset. We have assumed that the obstruction began with the beginning of symptoms. In the case of incarcerated small bowel in herniae it is fairly accurate to date the time from its descent into hernia.

According to the time elapsing between beginning of symptoms and operation the deaths were as follows in the various periods:

	Cases	*Deaths*
Less than 24 hours	27	1
24 to 48 hours	43	5
48 to 72 hours	14	6
Over 72 hours	27	8
Time not recorded	23	2

Among those that were enterostomized the deaths were as follows in similar periods:

	Cases	*Deaths*
Less than 24 hours	3	0
24 to 48 hours	14	6
48 to 72 hours	9	4
Over 72 hours	15	7
Time not recorded	1	0

The treatment of all these cases has been similar because my associate, Dr. E. S. Boice, and I many years ago arrived at the opinion that these patients needed normal saline early and in large amounts. They did not do well if allowed water by mouth. Our first enterostomy was done in 1919 to evacuate the large amount of liquid feces above an obstruction. We decided to sew in the catheter for drainage. This was largely empirical treatment, but its virtues and the correctness of our observations have been proven by the splendid work of Orr and Hayden,[2] Foster,[3] Foster and Hausler,[4] McIver and Gamble,[5] Trausler,[6] McVicer and Weir,[7] and others, in their recent experimental and chemical studies in obstruction. We have added dextrose solution intravenously and rectally, but otherwise have made no change in treatment for years.

Foster divides obstruction simply into two classes, as follows: First, "Such cases as bands and adhesions which cause acute simple obstruction

of the continuity of the gastro-intestinal tract without primary vascular derangement." Second, "Those, such as volvulas, incarcerated herniae, and intussusception, in which there is a variable length of intestine obstructed as well as in interference of the vascular supply to it." This second group he has called acute intestinal strangulation. We consider this a very simple, satisfactory, and workable classification.

The essential treatment of all obstruction, in our opinion, is to combat the dehydration, the loss of sodium chloride, the resulting alkalosis, rarely acidosis, the toxemia from strangulation, the kidney depression and finally, to reestablish bowel continuity. Operation is done immediately unless the patient is too ill, when time should be taken for giving dextrose saline solution and the application of heat to improve the general condition. This can often be done while preparations are being made in the operating room.

Subcutaneous or intravenous administration of normal or of two per cent saline intravenously in three thousand c.c. of water given in 12 hours, 1,000 c.c. at four-hour intervals, will overcome the dehydration, and reestablish the sodium and chloride ion balance which, in turn, successfully combats the alkalosis. If one hundred grams of dextrose are added to each one thousand c.c. of saline, the kidney depression will be overcome unless the kidneys have been greatly damaged. In giving the combined saline dextrose solution of this strength, it is necessary to administer it intravenously. Saline dextrose by rectal method is used chiefly to cleanse the bowel. Its retention and absorption by bowel is too uncertain to risk the life of the patient. We start the subcutaneous use of saline simultaneously with the operation.

Next in importance is the choice of anesthetic. This should be governed by the general condition of the patient and by the mechanical difficulties present, such as obesity and deep pelvic location. We have long recognized that the intra-abdominal obstructed cases of the same duration are more desperately ill than those of incarcerated hernia which we classify as extra-abdominal. The reason for this we do not know unless it is due to the tightly constricting ring preventing the peritoneal absorption of the products of decomposition secondary to strangulation. We think the following case shows the lack of peritoneal absorption: A robust colored man, aged 26, previously in good health, entered with large strangulated hernia of 16 hours duration. Temperature 98.2, pulse 82, blood pressure systolic 140, leucocyte count 8,000, blood urea 45. At operation he was found to have six feet, eight inches of strangulated gangrenous bowel composed of ileum and caecum with their mesentery. On making incision through skin there was distinct odor and discoloration of underlying tissue. When the sac was opened dark bloody fluid with very offensive odor escaped. The bowel was hopelessly gangrenous. Since the patient's condition seemed favorable, resection was thought feasible. A second low, right rectus, abdominal incision was made, cavity walled off, strangulated bowel released, and, to our great surprise, patient went into profound

shock and died on the table before resection could be completed. Saline had been started as usual, and he was under ether anesthesia. We attributed his death to unknown toxin or histarmine.

For all desperate cases and elderly persons, we use local anesthesia, sometimes supplemented by gas-oygen. For others, ethylene or ether. We do not favor a high enterostomy without the release of the obstruction. Two cases in which we did this died. Large quantities of material were drained off through the enterostomies but the patients never rallied sufficiently to warrant a second operation. Postmortem showed one to have a simple band, and the other, short intussusception, the release of which would have added very little to the operative risk. Forty enterostomies were done upon the intra-abdominal obstructed, while only two extra-abdominally obstructed (herniae) were so treated, yet in many of the latter the bowel was apparently damaged as much as in the intra-abdominally.

The incision is made at the point most serviceable for releasing the obstruction which is done with as little trauma and as rapidly as possible. The enterostomy should be located in healthy bowel about ten or twelve inches above the obstruction, using two rows of simple purse string, the first of which is passed through the tube, attaching it to bowel. It is important, on opening the bowel, to introduce suction tube, and quickly and gently evacuate contents of bowel, passing the aspiration up and down the lumen. We agree with others that this material should not be allowed to enter the collapsed, "thirsty" bowel below point of obstruction. Making enterostomy opening in greatly distended bowel, thus reducing the abdominal contents, often facilitates finding the cause of intra-abdominal obstruction. In a few cases several openings were made and closed immediately after aspiration. The enterostomy tube is brought out at either end of the incision or through a stab wound, following the Mayo method in use of omentum about the tube. Following operation the bowel is irrigated with two per cent salt solution, ounces two, every two hours during the next 48 hours. Morphine should be given in sufficient amounts at regular intervals to quiet patient.

Cardiac and respiratory stimulants such an epinephrin, ephedrine, coramine, atropine, large doses of caffein sodium benzoate, and others as are indicated. Gastric lavage is done when there is much vomiting. Fluids by mouth are withheld for 24, 48, hours and longer if indicated. These patients should receive large quantities of fluids, 3,000 to 5,000 c.c., subcutaneously or intravenously. Disagreeable gastric lavage, except at time of operation, is no longer a necessity when obstructions have been released, oral fluids withheld and subcutaneous saline given in above amounts.

SUMMARY

1. The early recognition of acute intestinal obstruction offers the greatest hope for lowering the mortality.

2. The application of modern treatment on the basis of our new knowledge to overcome the dehydration, alkalosis and kidney depression.

3. Proper selection of anesthetic for the individual case.

4. The judicious use of enterostomy in healthy bowel above obstruction, and not the empirical use of high jejunostomy.

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DISCUSSION

Dr. H. A. Royster, (Raleigh): Since our discussion is limited to the diagnosis and treatment of intestinal obstruction, it would be well, I think, to keep before us all as practitioners of medicine two or three practical points.

Dr. Willis is very wise in stressing the early diagnosis and early operation for the reason that all of these cases will eventually die unless something is done to relieve the mechanical obstruction early enough to prevent the toxemia which finally kills the patient.

The diagnosis of intestinal obstruction in the early stage is comparatively easy. If we wait for cardinal symptoms, we will sometimes find they are simply terminal events. A patient with a distended belly, projectile vomiting of a fecal character, a pulse of 140, subnormal temperature, and a cold, clammy skin, may have obstruction, but he also has death. If we wait for the development of all of the pathology which will enable us to say that the patient has every symptom of obstruction, he is sometimes beyond the hope of any treatment. The only hand that paints a perfect pathological picture is the hand of death. I am sometimes reminded of the fact that the diagnosis is difficult to make, but as stressed by Dr. Willis, the diagnosis made in the early stage, followed by operation, even if the condition is found to be different from that we suspect, will save the patient many times.

There is still, I think, a prevailing practice in many cases in a patient whose bowels haven't moved for three or four days and there is pain and

vomiting, to give purgatives. The same thing is too common in the case of acute appendicitis and "hands off purgatives" is the thing that should be taught and stressed and talked about all the time. It is better to use the hose pipe through the back door than to fill the patient full of purgatives which simply make him worse instead of better.

The diagnosis need not be a matter of refinement. It is unnecessary to determine always beforehand what the cause may be. Sometimes it is impossible even at the operation to determine the actual cause of the obstruction. We must, however, differentiate fecal impaction from all other types and, on that account, I advise always an examination of the rectum, in every case before operation and before complete diagnosis is made.

In one or two cases it has been my chagrin to open the abdomen, expecting to find an acute obstruction high up, only to reveal a large cancerous growth in some portion of the lower bowel which is producing the complete obstruction and which could have been determined beforehand.

The treatment of these cases must depend upon the program outlined by Dr. Willis, namely, the relief of the mechanical obstruction plus the employment of certain measures to combat the toxicity of the material above the obstruction.

Jejunostomy according to the method of Victor Bonney, and his theory of it, seem rather sound. He suggests three layers involving the obstruction; above, the fluid; in the middle, the gas, and below, the obstruction. The criticism of his method, though, the most important one I think, suggested the fact that Bonney is a gynecologist and most of his obstructions were in the lower pelvis, so that relief by the high enterostomy was readily accomplished after releasing a slight pelvic adhesion.

I agree entirely with Dr. Willis in his use of fluids to combat the dehydration and glucose and hypertonic chlorides to counteract the loss of those respective elements. I think in the last few months we have seen distinctly that intravenous injections of glucose and chlorides have saved lives of patients who otherwise would have died, even with the obstruction relieved.

The method of operating under local or light gas anesthesia, using methods that are quick and sure and safe, to get in quickly and get out more quickly, would offer the greatest hope for the patient. Sometimes these patients are not only victims of toxemia but they also are victims of trauma by the surgeon and sometimes the least we do, the better in many of the extreme cases. Always anyone handling these cases at operation should seek at once to to get hold of the collapsed portion of the bowel, not the distended portion, because if there is obstruction, it is where the junction of the distended bowel and the collapsed bowel come together. Then if we can find the cause of the obstruction and immediately relieve

it, doing an enterostomy or whatever is indicated otherwise, we will save the patient a great deal of manipulation.

Attention to the distended bowel alone will produce trauma and not find the obstruction. On the other hand, here again refinement is not necessary. Sometimes we can open an abdomen and cure the patient and he gets well of obstruction and we never know exactly what type of obstruction it was or where it existed. My experience with enterostomy has not been very favorable, perhaps because I might be criticized in not using it early enough or frequently enough.

I have lately been interested in the use of the Levin tube which I think is superior to the Rehfuss tube or any other form of that type. It goes in through the nose, down into the duodenum or where it is wished to be applied. It is made of very pure rubber and is much more comfortably borne by the patient than the Rehfuss tube through the mouth.

Like Dr. Willis, I have avoided lately the frequent and constant use of large stomach tubes, although I believe sometimes in the first rush of symptoms that a thorough lavage may be indicated, particularly if the patient is vomiting fecal matter and is apt to drown in his own vomit. Altogether, what I think the practitioner is interested in when handling these cases is the diagnosis, feeling sure himself that the obstruction exists and then the submission of the case to operation upon the establishment of the diagnosis beyond a reasonable doubt. (Applause.)

Dr. T. C. Bost, (Charlotte): I didn't get to hear all of the paper, but any subject like this, intestinal obstruction, that still claims our highest mortality of any of the more usual surgical conditions certainly should have our most careful consideration. I got in in time to hear Dr. Willis emphasize enterostomy, avoiding of course the upper intestinal tract, the upper jejunum. That is a thing I have been advocating for a number of years and I think it is a life-saving device and has in recent years saved many patients that we would have otherwise lost, especially is this true, or apparently true, in view of some recent experimental work carried out by Gatch and Ayers and their co-workers. They have shown in animal experimentation that the gaseous distension in the bowel impairs the blood supply in the intestinal wall. As that pressure becomes greater and greater, it eventually cuts off the blood supply to the bowel, and they conclude that the toxemia and cause of death is due to a necrosis of the bowel wall. Then if this is true, the enterostomy which not only relieves the patient of the toxemia within the bowel but decompresses the bowel, removes the gas which in turn lowers the pressure and maintains blood supply. This gives an additional cause to our previous idea of the main cause of death and toxemia in these cases; namely, dehydration and fall in chlorides, rise in carbondioxide combining power of the blood, and a rise in nitrogen. It gives us another thought, in that we may have, according to their work, toxemia coming from the bowel wall itself, due to

necrosis of the bowel from the lack of blood supply. So this is only the more reason why we should make ample provision for relieving the distension and keeping the bowel depressed so as to obviate this possible danger.

Dr. B. C. Willis, (Rocky Mount), closing discussion: I want to thank Dr. Bost for his discussion about enterostomy. I think that enterostomy has saved a number of our cases' lives. I think, though, that we should be very sure that they are in need of enterostomy and, as I stressed in my paper, the judicious use of enterostomy should be employed. I think that is what Dr. Bost has in mind.

I also want to thank Dr. Royster for his discussion which added very greatly to my paper.

I would like to reiterate the free use of saline. Some people seem to think 1,000 c.c. is a tremendous lot. Don't stop at 1,000. Give them 5,000, 8,000 if necessary. We have given 8,000 in nine hours to a practically moribund patient and saved him. You can't overcrowd the circulation with subcutaneous administration of saline. The circulation will not be embarrassed. You may embarrass the local part, but you cannot embarrass the circulation by the subcutaneous use of saline. Don't be afraid of that.

I went to a hospital some time ago and asked them to give saline and they gave 500 c.c. and withdrew the needle. To my mind, that is just wetting the lips of a patient. Give them large quantities. You can't overdo it. Withhold everything by mouth. The alkalosis and the hypochloremia are secondary to the loss of the hydrochloric acid from the stomach and fluids. It has been shown that the intestinal tract secretes within twenty-four hours from four to five litres. It is ordinarily reabsorbed, but if you allow this patient to vomit, he rapidly becomes dehydrated. I think, of course, that what Dr. Royster says about the vomiting is right. That should be corrected and the time to correct that is on the operating table as you complete your operation. The gastric lavage should be done then, not six or eight hours afterward. Remove the toxic material from the stomach almost simultaneously with the operation. I believe it will save a great many lives if you will use the simple principle of giving these people enough saline, morphine and the judicious use of enterostomy and withhold fluids by mouth. Thank you. (Applause.)

Chairman Holmes: The next paper on our program is from the Section on Gynecology and Obstetrics, "Surgery of the Female Pelvis from an Anatomical Viewpoint," by Dr. Ivan Proctor, of Raleigh.

Dr. Ivan Proctor, (Raleigh): Mr. President, Members of the North Carolina State Medical Society: Before starting this paper, I want to thank Dr. Kitchin (I don't believe he is here now) and the Wake Forest Medical School for use of material in special dissection of the female pelvis and also Dr. Mangum of Chapel Hill for his valuable assistance in preparing a model to demonstrate the pelvic fascia.

SURGERY OF THE FEMALE PELVIS FROM AN ANATOMICAL VIEWPOINT (Illustrated)

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When asked to present a paper before this General Session a subject dealing with pelvic anatomy was chosen, first, because of its vital importance to the gynecologist and obstetrician; second, because of its interest to every surgeon; third, because of its value to every general practitioner, as well as to the diagnostician and internist.

In constructive surgery in this part of the human body, detailed knowledge of the anatomy is essential for good results. Injuries to the pelvic supports produces comparatively little mortality but the morbidity rate probably exceeds any other illness of adult life.

There is prevalent among medical students and many physicians, an idea that the anatomy of the pelvic floor is quite complicated, and that of the pelvic fascia almost beyond comprehension. This idea we believe to be erroneous and not founded upon fact. As you recall from your embryology, the body is made up from the three great layers, i.e., ectoderm, mesoderm, and entoderm. From the ectoderm comes the skin and hair; entoderm, intestines, and the mesoderm, the blood vessels, bone and muscles.

All the layers develop along together forming their special organs and that part of the embryo that is left after developing the special structures goes into the formation of fascia which envelops every organ and muscle in the body. The fascias are usually named according to their location.

The outside of the body is covered with two layers, the superficial and deep layers of the superficial fascia. In certain parts of the body these layers are inseparable; for instance, over the thorax there are no superficial vessels and nerves to be protected and the two layers of fascia appear as one, while over the abdomen the many superficial vessels and nerves are embedded in a fatty fascia called camper's and beneath this there is a dense layer of superficial fascia called scarpas. This layer of fascia passes over into the perineum to become colles fascia and into the thigh to fuse with the fascia lata.

Colles Fascia—The deep layer of the superficial fascia (colles) is the most superficial of the three true perineal fascias and is attached on each side to ischio pubic ramus as far as the tuberosity and fuses posteriorly, with the free border of the urogenital diaphragm. The extravasation of urine under colles fascia (in the superficial perineal interspace) has no escape except up between the symphisis and the spine of the pubis on to the abdomen under scarpas fascia. In the male, in addition, it may pass out in the scrotum under the dartos.

Looking at the pelvic floor from before backward one sees the three canals, urethra, vagina and rectum penetrating the floor (the first two

through urogenital diaphragm) at different levels. The urethra is attached to the posterior surface of the pubic bone, to the subpubic fascia and the anterior vaginal wall. The commonest injury to the urethra (urethrocele) is repaired by reefing the muscle or repairing the fascia of the urogenital diaphragm.

The superficial fascia passes over poupart's into thigh, on to the penis and scrotum to help form the dartos—in the female into labia.

The abdominal cavity is lined on all sides by a fascia but as this membrane covers certain parts it assumes the corresponding name, for example, psoas, lumber dorsal and when it splits to envelop the kidney, it is called renal. When the fascia passes into the false pelvis it becomes the iliac fascia and then below the ileopectineal line, the pelvic fascia. So it is that the pelvic fascia is nothing more or less than a part of the membrane lining, the abdomen, and other cavities of the body.

As the pelvic fascia passes downward along the outer wall of the pelvis we see a thickened line running directly from the spine of the pubis to the back of the symphisis, which is called the arcus tendinous or white line. At this point a dense sheet of fascia is split off and passes downward and inward to meet its fellow of the opposite side and covers the superior surface of the levator ani muscle. This is the endo-pelvic or levator fascia.

Just beneath the white line and arising from the pelvic fascia, which now assumes the name of obturator fascia because it covers the obturator internus muscle, is the levator ani muscle. This is a broad thin muscle arising equally on the right and left, passing downward and inward to join its fellow of the opposite side to act as a sling for the pelvic organs and become their main support. The endo-pelvic fascia lining the upper surface of the levator is the strongest part of the sling.

The levator muscle is made up of three parts, the pubo coccygeus, arising from the symphisis and ramus of the pubis, passes directly backward, to be inserted into external sphincter, ano coccygeal ligament, sacrum and coccyx. Part of the others decussate with the fellow of the opposite side (same as muscles in the thoracic diaphragm) forming a sphincter like muscle which slings the rectum to the symphisis and has a cut off action at the anal canal. This is the only portion of the levator effective in lifting the rectum. It is this lifting effect that closes the mouth of the vagina the same as the lifting effect of the masseter muscles closes the opening at the origin of the alimentary canal. Both openings are in the form of a transverse slit with a fixed anterior part and a movable posterior part, which closes the opening by the latter being drawn up against the fixed portion in contra-distinction to closure by sphincter like action.

Ileo Coccygeus—The second portion of the levator arises from the tendinous arch, the so-called *white line,* a division in the pelvic fascia into obturator and endo-pelvic. These levator fibers are inserted into the coccyx, ano coccygeal ligament and some decussate with the fellow of the opposite side in the perineal body. This part of the levator together with

its fellow of the opposite side, acts upon the anus to constrict the vagina. These fibers are often broken or separated in labor and must be reunited; they are located at the outer free edge of the triangular ligament.

Ischio Coccygeus—The third part of the levator ani arises from the spine of the ischium and is inserted into the coccyx and side of the sacrum.

Functionally, the levator and the external sphincter must be considered together as a strong band extending from the pubes to the coccyx, embracing the lower end of the rectum and attached to the side walls of the vagina; it is "v" shaped with the angle of the v wider posteriorly between the ischial spines and narrow anteriorly at the pubes. The sides of the v have slight convexity toward the median line with the apex at the coccyx. The open part of the v between the pubo coccygeus muscles is protected by the urogenital diaphragm (triangular ligament).

Just beneath the origin of the levator ani another but a much thinner layer of fascia, is split off from the obturator which lines the lower surface of the levator muscle and is called the anal fascia. It lends very little support but goes to form the inner wall of the ischio rectal fossa. The outer wall is formed by the obturator fascia which splits around the internal pudic vessels and nerve to form Alcock's canal.

At the free (medial) border of the right and left levator muscles the superior (endo-pelvic) and inferior (nal) fascias unite with one another, continue toward the median line to join their fellows of the opposite sides but in this journey they pass between the anterior wall of the rectum and the posterior wall of the vagina, and at that point forms the main supporting structure and it is injury to this fascia that produces rectocele and its repair is absolutely necessary to cure such a hernia of the rectum.

The urogenital diaphragm or (triangular ligament) is made up of two strong layers of fascia which are attached in front and at the sides to the pubic and ischio pubic rami as far as the tuberosities. The two layers are united at their posterior free edge (forming anterior boundary of the ischio rectal fossa) and contains between its layers in the

Male	*Female*
Membranous urethra	A portion of urethra
Compressor urethrae membranacea	Compressor urethrae membranaceae
Cowper's gland	Bartholin glands
Internal pudic vessels	Internal pudic vessels.

The depth of the diaphragm is one and one-half inches and it is perforated by the urethra and vagina.

Just behind the base of the triangular ligament and in front of the anal canal in the floor of the pelvis is a mass of muscle and fibrous tissue called the perineal body. In this mass are a number of involuntary muscle fibers running both transversely and longitudinally in close relation to all the muscles. These fibers tend to draw the two halves of the levators (pubo coccygeus portions) and the transversus perineii toward the median

line (which prevents gapping of the introitus) and by drawing the anterior end of the sphincter forward aids in supporting the power of the levator. With this contraction the urogenital trigone is pulled upward and forward closing the vaginal slit. The supporting action of the levator is assisted by forward pressure of the obturator and gluteal muscles and the tissues filling the ischio rectal fossae.

Injuries to the pelvic floor are produced by the advancing fetal head when it receives the brunt of the strain of labor during internal rotation, or at times is torn by the forceps blade. These breaks are similar to ruptures of the fascia lata of the thigh when the strain of standing falls upon the quadriceps extensor with resulting fatigue and ultimate stretching of that muscle. The torn pelvic fascia allows the strain to fall upon the anterior fibers of the levator torn away from its lateral attachments to the rectum and perineal body, into which fibers of each muscle decussates.

The consequence is ultimate stretching and relaxation while the result is that the posterior segment of the pelvic floor is not properly lifted because of the elongated or torn levator fibers. This leaves the vaginal mouth constantly open and the unsupported vaginal walls with their attached viscera, tend to roll down and out. The strength and support of the posterior vaginal wall and rectum reside in the firm barrier formed by the fusion of the two layers of the levator fascia, the fascia of the urogenital diaphragm and colles fascia at the sides of the perineum. Then the function of the pelvic diaphragm is most easily destroyed by injury to the involuntary muscle fibers of the perineal body, resulting in opening of the vaginal mouth. More important however, is injury to the endo-pelvic fascia which allows not only herniation of the levator muscle but hernia of the rectum and prolapse into the vagina.

The effect of these injuries increase in direct proportion to the amount of time it is allowed to remain unrepaired and the amount of intra-abdominal pressure to which they are subjected. Muscles atrophy from non use; the fascia becomes stretched and the unsupported action of the sphincter allows the posterior vaginal wall and rectal wall beneath to prolapse. The gluteal muscles give support for a time by pushing up on the tissues of the ischio rectal fossa but sooner or later, fascia of the levator bounding the inner walls of the fossa give way under the strain and the gluteal support is lost.

In examining for injuries to the pelvic supports we find on introducing the finger into the vagina of a nulliparous woman that the pubic arch is felt in front while posteriorly a broad muscular band stretches beyond the outlet from right to left pubic ramus. Pressure upon the band causes it to yield but it returns when the pressure is released. Increasing the intra-abdominal pressure as if there is relaxation or injury demonstrates the harmful effects of lifting, walking or straining at stool in these cases. An increase in intra-abdominal pressure while the tip of the forefinger rests on the cervix, demonstrates the amount of prolapse, especially if in the erect posture where it shows the effect of standing. With the patient in

the Sims, better the knee chest posture, the entrance of air into the vagina shows its funnel shape in the nulliparous and the large balloon opening in the pelvic floor where there is relaxation. With the forefinger in the rectum and thumb in the vagina (patient dorsal posture) we palpate the very thin recto-vaginal septum in cases of injury where the levator fascias have retracted laterally. Further the strong lifting anterior levator fibers hang more or less parallel to the lateral vaginal walls, there being a change in both size and direction of the levator loop surrounding the posterior vaginal wall.

Enterocele (high rectocele or hernia of Douglass)—A hernia at this point is due to a tearing of the fascia over the vault of the vagina or to an elongation or atrophy of the utero sacral and recto-uterine muscles, or to both. The condition may be seen alone, with rectocele more often accompanying prolapse of the uterus. The repair consists of dissecting out the hernial sac closure of the rent in the fascia and the reunion of the muscles of the utero sacral and recto-sacral ligaments.

The operation of rectocele to be effective requires complete knowledge of anatomy of the pelvic organs and their supports together with the physiology of the same. To try to cure a rectocele by simply cutting away the redundant vaginal wall and suturing the raw edges would be the same as using the old hernia operation of suturing the pillows of the external ring instead of the anatomical repair outlined in the Halstead Bassini technique.

A rectocele is a true hernia of the bowel through its broken supporting wall. The rectum becomes enlarged, pouched and finally prolapsed. The mere building up of a perineal body with a skin surface of 2½ cm. from anus to fourchete does not mean that the hernia has been repaired. The correction can only be secured by a repair made upon an anatomical basis, which consists of complete separation of the rectum and posterior vaginal wall as far up as Douglass culdesac. The rectal pouch is then carried high up along the vaginal wall and is fastened by suture to the untorn and unstretched fascia. The fused endo-pelvic and anal fascia which have been torn and retacted from its position anterior to the rectum is then picked up laterally and sutured in the midline. This gives the normal support to the rectum which prevents pouching and the fixation suture holds the prolapse high in the pelvis. The torn retacted fibers of the levator together with the fascia is then gathered up at the lower border of the triangular ligament and are sutured in place. The operation is then completed according to the particular type of denudation used.

Such an operation is designed to cure the existing hernia by rebuilding the injured supports and not by simply closing the mouth of the vagina and hiding the hernial sac.

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DISCUSSION

Dr. Charles S. Mangum, (Chapel Hill): I have been asked to say something about this paper from an anatomical standpoint. Dr. Proctor states at the beginning that to medical students and most practitioners of medicine the anatomy of the pelvis is very difficult and the anatomy of the pelvic fascia is almost incomprehensible. I think that you will agree with me that his paper bears out that statement. I doubt if there is a large number present in this gathering who are able to visualize the relationship of the anatomical structures in the pelvis, even though I testify to the clearness and accuracy of the description given by Dr. Proctor. He has made a very thorough and painstaking study of the supporting tissues within the pelvis and his conclusions show that this study has been worth while. It comes to the question of obtaining the best results. I think therein lies the lesson from the standpoint of an anatomist. You older men in this gathering remember that when you were students of medicine, anatomy was one of the most important of the subjects taught. One reason was there were so few things to teach. Since chemistry has taken such an important place in the curriculum of the medical schools and since the experimental laboratories have been developed, time has had to be taken from somewhere and anatomy has suffered in this element of time more than any other of the branches in the medical curriculum. It is impossible now for those of us who are responsible for the teaching of anatomy to give anything like a comprehensive course on a subject of such magnitude. The best that we can hope to do is to give to the first year student of medicine a background, a foundation in this field which will enable him to study it intelligently. Those of you who are specializing in the different fields where surgical indications exist could well copy this painstaking, careful survey which Dr. Proctor has made of the supporting tissues within his own field. It isn't for me, an anatomist, to advise a surgeon as to technic. I know nothing about it, but it does seem to me that when nature has developed within the body this intricate supporting tissue (it bears the same relation to the softer structures of the body that the skeleton bears to the whole body), if those of you interested in repair after injury do not take into full consideration nature's own perfect supporting mechanism in your operations of repair, you are losing an opportunity to further strengthen these weakened parts by an application of the forces and the supports and the material which nature has put there to begin with—a better surgeon or a better builder than you can ever hope to be.

There is nothing so very difficult about these delicate supporting tissues of the body, the fasciae. Dr. Proctor brought that fact out. It is practically all one thing. The multiplicity of names is what makes it so difficult. The so-called fasciae of the body are simple in principle, complex or complicated in arrangement. When one wishes to understand the supporting tissues of any part of the body, whether in the pelves or elsewhere, all he has to do is to learn the relations of the organs in that field to one another. The fasciae occupy the position they have to occupy, separating this from that, enveloping this and that, and connecting this and that. It is a supporting tissue which is practically universal and where space is not needed for some other purpose, nature uses it in filling in with this cement, you might call it, to hold the organs together.

It pleases me, naturally, to find a man skillful in his own field working out a plan based upon nature's own method, to make thorough the repair work done in this field. (Applause.)

Chairman Holmes: The next thing on our program is an address from the Section on Pediatrics, "The Newborn," by Dr. J. LaB. Ward, of Asheville.

Dr. J. LaB. Ward, (Asheville): When I was requested to present a paper before this Section, it occurred to me that it would be well to take a subject that would appeal to the general practitioner, and I have chosen for consideration the very high death rate occurring during infancy, with the hope that by stressing two points where I thought this death rate might be lowered, it might interest you, because we realize that most of the infants and children are treated not by the pediatrician, but by the general practitioner and the responsibility, therefore, is largely his, if the death rate is to be lowered, except in the cases, of course, where they are taken to the pediatrician, usually in an extreme condition and in that case they die a pediatric death.

THE NEWBORN

By John LaBruce Ward, M. D.

Asheville, North Carolina

(From the Section on Pediatrics)

North Carolina has the proud distinction of having the highest birth rate in the registration area of the U. S., comprising about sixty per cent of the population, the rate being 28.8 per thousand as compared to a rate of 20.6 for the entire area. These figures and those which follow are taken from, "Birth, Stillbirth, and Infant Mortality Statistics for the Birth Registration Area of the U. S. for 1926." Our death rate while lower than that of any other southern state, is only slightly lower than the general death rate. The highest mortality for any age group occurs during the first year of life and it is when considering this mortality that our pride must bow to humility for our rate of 82.3 per thousand births is higher than that of the registration area and, indeed, is exceeded by that of only

five other states. During 1926 there died in the registration area, 136,000 infants under one year of age and of this number 63,507 died during the first two weeks. During the same period the total deaths in our state were 34,562, of which number 6,769 were under one year of age and 3,206 under two weeks of age. It is evident that if lives are to be saved our attention must be focused on the young infant and more especially on the newborn during that period so aptly called "the fatal fortnight." This is the no man's land of scientific medicine. Twenty per cent of the total death rate occurs during the first year and almost half of this toll is exacted of the newborn. It is no easy task to determine why a higher mortality obtains in one place than another. Among many factors must be considered race, climate, poverty, habits, illiteracy, and last but not least, intelligent care of the mother before pregnancy, during pregnancy, during parturition, and of the baby during and immediately after birth. Do any or all of these factors serve to solve the riddle? For instance, in the fourteen largest cities of North Carolina, the death rate for infants under one year of age ranges from 85.7 per thousand births in Raleigh to 195.9 in New Bern. Why should Raleigh, Salisbury, and Asheville show the lowest mortality and New Bern, Wilson, and Winston-Salem, the highest? The first step in reducing mortality is to determine its cause and here we find ourselves in a mystic maze. Like Dane, we are in a gloomy wood astray. What kills these babies? This question is answered only in part by the statistics. Aside from the communicable diseases which, with the exception of syphilis and, according to statistics, even including this), play a negligible role, the following are given as the causes of death: Syphilis, convulsions, pneumonia, diseases of the stomach, diarrhea, enteritis, congenital malformations, congenital debility, premature birth, injury at birth, other diseases of early infancy, external causes, unknown or ill defined diseases, and all other causes. Of the total number of deaths, 60 per cent fall under one of these meaningless classifications. Only one death in 135 is supposedly due to syphilis while we search in vain for a baby dying of hemorrhage. That a not inconsiderable number of deaths are, in reality, due to these two causes is probable. We know that syphilis is responsible for more abortions, stillbirths, and premature births than all other cause combined. Is it possible that it causes the death of less than one per cent of the newborn? Do we gather grapes of thistles or figs of thorns? The baby is said to die of "prematurity," but what of the cause of prematurity? The disease seldom manifests itself during the first two weeks of life and consequently the newborn may die of it and the death be attributed to "congenital debility" or some other condition which sounds as well and means as little. The following quotation from Still is apropos: "Some idea perhaps of this early mortality amongst the children of syphilitic parents may be gained from the following figures in which only those stillbirths, miscarriages, and early deaths are included which immediately preceded or followed or formed part of a series immediately preceding or following the birth of the patient in whose family the history

occurred. There were 39 stillbirths, 36 miscarriages, and 25 deaths attributable to congenital syphilis in the family histories of 87 children who were under treatment for congenital syphilis." Whitridge Williams at Johns Hopkins Maternity, in a critical study of 302 foetal deaths, (212 of the dead babies coming to autopsy), occurring in 4,000 consecutive deliveries, found that 34.4 per cent of the deaths were due to syphilis. Of these 4,000 mothers over 10 per cent gave a positive W. R. Of the syphilitic mothers who had no treatment 52 per cent had stillbirths or syphilitic babies; of those having inefficient treatment the percentage was 37 and of those having satisfactory treatment it was only 7.4. From a mass of statistics from this and foreign countries, Jeans draws the following interesting conclusions: (1) From 10 to 20 per cent of adult males and about 10 per cent of married women are syphilitic and a minimum of 10 per cent of marriages involve a syphilitic individual. (2) Seventy-five per cent of all the offspring in a syphilitic family are infected. (3) In a syphilitic family 30 per cent of the pregnancies terminate in death at or before term, a waste 3 times greater than is found in non syphilitic families .(4) Thirty per cent of all the living births in a syphilitic family die in infancy as compared to a normal rate of 15 per cent in the sane class. (5) Probably 25 to 30 per cent of clinically syphilitic infants die as a result of syphilis. (6) But 17 per cent of all the pregnancies in syphilitic families result in living non-syphilitic children who survive the period of infancy. (7) About 5 per cent of our infant population is syphilitic. (8) According to St. Louis vital statistics, 3½ per cent of all infant deaths are ascribed to syphilis. The first and great commandment to guide the footsteps of the followers of Hippocrates, is, "know syphilis," and the second is like unto it. How may the facts be ascertained and what is the remedy? The physician should have a Wassermann test made on every pregnant woman as soon as he assumes charge of her and, bearing in mind that during pregnancy a false negative reaction may occur, a second test should later be made if the first is negative. A test of the husband's blood may also be made but a negative result does not always prove his adherence to monogomy for the wise old cock may have drawn a red herring across the trail of the pallid treponema by having taken a few injections of that drug which crowned the efforts of Ehrlich after 605 failures. Having established the diagnosis of syphilis in the pregnant woman and, regardless of the absence of clinical symptoms, (because the pregnant state frequently prevents marked syphilitic manifestations), a thorough course of treatment should be carried out. If this be done, 90 per cent of these women will bear healthy offspring. Is this price too high to pay for the prize. Is our patient entitled to anything less? On the other hand, if a baby is born of a syphilitic mother who has not had thorough treatment, and regardless of whether the infant shows clinical evidence of the disease, treatment with arsenic and mercury should at once be instituted and should be continued, with intermissions, for at least one year. The same should be done when there are clinical evidences of syphilis even though mother

and baby both have a negative W. R., because the reaction is seldom positive in the blood of the infant until a few months after birth. Now let us consider the other condition which kills many babies and which is not even mentioned in statistics—cerebral hemorrhage. Intra-cranial hemorrhage of the newborn should not be confused with hemophilia which is an inherited tendency to bleed, this tendency affecting males almost exclusively and being transmitted only through females. It is never present shortly after birth. Green, in 1918, called attention to the fact that some babies with intracranial hemorrhage also showed evidence of bleeding from the mouth, intestines, cord or subcutaneously and the same year Foote stated, referring to intracranial hemorrhage, "all the causes are not maternal, there is a hemorrhagic tendency in the newborn infant which does produce after labor symptoms of hemorrhage of the brain. Warwick, (1919), after autopsy in 36 newborn and stillborn infants reported intracranial hemorrhage in 50 per cent. Of course this does not imply that half of these infants died as the result of bleeding but it does mean that babies die of cerebral hemorrhage and some of these deaths are preventable. Dr. Foote (of Washington, D. C.), shows that while the total death rate in the Columbia Hospital, during the first month, was 31 as compared to 47 for the District of Columbia; the per cent of the hospital cases attributed to hemorrhage was 20.7 as compared to 5.1 for the District. From these facts, we must draw one of three conclusions, (1) that the physicians in the hospital were diagnosing some other condition as hemorrhage; (2) that the physicians outside of the hospital were diagnosing hemorrhage as something else; (3) that hemorrhage occurred four times as often in the hospital as out of it. So far as treatment is concerned, there are but two types of cerebral hemorrhage, those giving alarming symptoms at or shortly after birth and those coming on slowly. In the first type the symptoms are cyanosis or pallor, moaning, crying, restlessness, refusal to nurse, rigidity or paralysis of limbs, stupor, convulsions, and disturbed pulse and respiration. The fontanel may or may not bulge. The reflexes are difficult of evaluation but even slight paralysis of muscles is easily determined. In his type of hemorrhage, the withdrawal of fluid from the spinal canal or from the ventricle may save some cases but the procedure is not devoid of danger. The other type of hemorrhage offers a far better outlook if recognized and treated early. These infants appear normal at birth, the first symptoms usually manifesting themselves within 48 to 72 hours but sometimes not until the fifth day after birth. The earliest symptom and the one to which too little importance is attached, is disinclination to nurse. The full term healthy baby will nurse whenever he has the opportunity and his inability to do so should always be construed as an appeal for help, particularly is this true if he nurses well for 24 hours and then loses interest in the maternal font. Cyanosis usually appears as the next symptom but it is intermittent, coming at irregular intervals. Perhaps we are too prone to think of congenital heart disease when cyanosis occurs. If this is severe enough to cause marked symptoms, the cyanosis

is continuous although varying in degree from time to time. Autopsy findings prove that as compared to cerebral hemorrhage, congenital heart disease is relatively infrequent. About the time that cyanosis occurs there may be twitching of the facial muscles or the limbs. Dunn considers facial edema strongly indicative of severe hemorrhage and Foote says that a valuable early sign, though not a constant one, in infratentorial hemorrhage, is protrusion of the tongue. Head retraction is the rule but the fontanel bulges late if at all. In cortical hemorrhage, the fontanel usually bulges but there is seldom head retraction, and if there is facial paralysis it is unilateral, as a rule, whereas the reverse holds true in bleeding below the tentorium. Morse states that spasm is often first manifested by opposition to abduction of the thighs. Strabismus is normal to the newborn but failure of the pupils to react to light should put us on our guard. In hemorrhage the pupils are more frequently contracted than dilated. Paralysis whether localized or general, says Holt, is of greater diagnostic aid than are convulsions.

From the above it will be apparent that if we are to save these babies, it will be only by eternal vigilance and prompt action. They should be treated on the first suspicion of hemorrhage for if we wait for the advent of marked symptoms it will make no difference to the baby whether the diagnosis is made or not. This is a pediatric emergency and the delay of a few hours weigh heavily in the balance against the survival of the baby. Better treat some babies unnecessarily than lose many because of delay. Brilliant results often follow the injection of blood in these cases but the use of animal blood serum more than a few hours old is useless because it is wanting in prothrombin upon which its efficacy depends. When blood is not available, we may inject subcutaneously one c.c. of fibrogen or 10 c.c. of thromboplastin, and repeat this every six hours unless there is improvement or until six injections have been given. Much better, is the use of blood which when injected intramuscularly or intraperitoneally is a simple procedure practically devoid of danger. As soon as the first suspicion of hemorrhage occurs, 20 c.c. of unmodified or of citrated blood should be injected deep into the buttock of the baby and if there is muscular twitching, cyanosis, or other alarming symptom, 50 c.c. of blood should be given intraperitoneally. In extreme conditions one is justified in using unmatched blood for intraperitoneal injections. Of course matching is not necessary when the blood is injected into the muscle, but in either case a Wassermann test should be made unless the blood from a parent is used. These injections should be repeated every 8 hours until there is improvement. The technique is so simple that any physician can give an intramuscular injection of blood. A Luer syringe and two 18 or 20 gauge needles (free of rust and with a sharp point) are the necessary instruments. After sterilizing these and painting the skin over the vein of the donor and over the upper and inner portion of the infant's buttock, with iodine and then with alcohol, the blood is withdrawn from the vein and immediately injected deep into the buttock. There is little danger

of clotting when only 20 c.c. of blood is given. When more is given, unless several syringes be used, it is best to draw into a 50 c.c. syringe, 6 or 8 c.c. of a 2 per cent solution of sodium citrate(conveniently supplied in ampules) before introducing the needle into the vein. For intraperitoneal injection, the skin one inch to the left of the navel should be sterilized and the needle forced through the abdominal wall at this point until the lack of resistance tells us that the abdominal cavity has been entered; then the syringe is depressed and the blood injected. A baby having hemorrhage should be shown at least as much consideration as is shown an adult. He should not be disturbed by handling and should not be allowed to nurse. The breast milk should be expressed and given with a medicine dropper at regular intervals and water given in the same manner. This holds with equal force in the treatment of the premature baby and of all weak babies. The ritual of many clothes and bath should be dispensed with, the baby placed in a premature dressing fashioned of cotton batting and gauze which should be changed only every second day when the baby is anointed with warm olive oil, with warm hands in a warm room. A blanket should line the basket and surround it except for a space of eight or ten inches at the head. Two or three hot water bottles should be placed inside the basket and refilled often enough so that a house thermometer placed near the baby registers about 100 degrees. Warmth is the first essential. At first, diluted breast milk should be given with a dropper in quantities of one half ounce every two hours, the quantity to be increased and the interval lengthened according to the digestive capacity of the baby. The barbarous custom of permitting all of the old grannies, wise and otherwise, in the neighborhood to disturb the baby and infect him should not be tolerated, however unpopular it may make the physician.

In closing permit me to stress these points: The pregnant woman is entitled to one or more Wassermann tests. If syphilitic, prompt and thorough treatment will prevent a large number of miscarriages and premature births and will eliminate syphilis in at least 90 per cent of the babies. Not only when suspicious signs of hemorrhage occur but after all prolonged and instrumental deliveries, blood should be injected into the infant. It can do no harm and will prevent much mischief. Forceps and pituitrin are important factors in causing hemorrhage of the newborn and should never be employed to save the physician's time but only to save the life of the mother or her babe. The object of obstetrics is not merely to have the mother survive but to have a healthy baby. The premature should be kept warm, fed by a dropper with breast milk and handled by no one except the nurse and as little as possible by her.

DISCUSSION

Dr. Ivan Proctor, (Raleigh): Mr. Chairman, I don't think we ought to let Dr. Ward's paper go by without having a word on it. I certainly cannot add anything to what he has said except to bring up an additional

treatment for the newborn with symptom of hemorrhage. I don't think he mentioned this, and that is the reason I get on my feet now.

In addition to his injecting blood subcutaneously, I feel that it is very important, and in my experience it has proved very beneficial to drain the spine of these babies. In our opinion all babies who show cyanosis, twitchings, or refuses to nurse, should have a spinal puncture, and especially in those babies who are delivered through contracted pelves or instrumentally. We usually drain the spine once every twenty-four hours but on some occasions, in aggravated cases, this may be done every twelve hours. The fluid should be drained off until it is clear.

We have seen excellent results follow such treatment and believe it is a life-saving procedure.

Dr. J. LaB. Ward, (Asheville), closing discussion: Mr. Chairman and Gentlemen: In regard to Dr. Proctor's question, I have used this method. I mentioned it in my paper; he perhaps did not hear it. I mentioned the spinal tapping and also tapping the ventricals. I have practiced both. I can't say that I am convinced that it does very much good. I realize in saying that that I take issue with a great many men who know more about it than I do, but I have tapped the spine in infants as early as thirty-six hours after birth and I have also done ventricular tapping in a few cases, and I am not convinced in my own mind that it is productive of good. I will have to be honest about it.

In regard to Dr. Corbett's question as to the effect of arsphenamine given to the mother or the baby through her milk, I was not taking up the treatment of syphilitic infants. I was rather trying to stress the point that we should not have any syphilitic infants. If the disease is recognized early in the mother by having repeated Wassermanns made and the mother is adequately treated, the pediatrician will have no congenital syphilis to treat. It is a known fact, however, that the arsphenamine does pass through the milk and affects the baby, but I am opposed to treating an infant through the mother. I think, to say the least of it, it is very unscientific and very uncertain. You can't measure in any way the amount of the drug, arsphenamine or anything else, which passes through the milk. It varies in different mothers and, therefore, the only proper way to treat these infants who are syphilitic is to give them arsphenamine and mercury alternating pretty much as we treat adults, except that I prefer the arsphenamine given subcutaneously, rather than attempting to give these infants a drug intravenously, and I prefer to give the mercury in oil injected into the muscle which insures slow absorption and enables us to give a larger dose than we would otherwise.

A gentleman just asked a question as to the effect of inflammation of the breast in young girls and babies and the probability of producing inverted nipples later on. I really can't answer that question, but I should say that we all know there is a certain amount of congestion which we commonly call mastitis in newborn babies and this occurs in boys almost as frequently as girls and the important thing to stress is that

these breasts should not be massaged. They should not have ointments put on them. They should be left alone, because I have known of two instances where abscesses were caused by massaging the breasts. Of course, in the case of a female baby, this may be a very serious condition because it will probably destroy the glands partially or in toto and, therefore, when she becomes a mother, she will be unable to give milk from that breast. (Applause.)

CHAIRMAN HOLMES: Gentlemen, that completes our program for this morning. At twelve o'clock the conjoint session of the Medical Society of the State of North Carolina and the State Board of Health will be held in this room.

The meeting adjourned at eleven forty-five o'clock.

LETTERS OF SYMPATHY TO FELLOWS WHO ARE ILL

May 14, 1929

Dr. W. D. Pemberton,
Concord, North Carolina.
Dear Dr. Pemberton:-

The Medical Society of the State of North Carolina at its recent session, authorized the Secretary to express to you our sincere regret at your recent illness and the hope that you may soon be restored to full health and usefulness.

With love and esteem, we beg to remain,

Fraternally yours,
L. B. McBRAYER, M.D.,
Secretary-Treasurer.

April 20, 1929

Dr. I. H. Manning,
Chapel Hill, North Carolina.
My dear Dr. Manning:-

The Medical Society of the State of North Carolina in its session at Greensboro this week instructed me to say to you that we missed you greatly and that we sympathize with you in your illness and wish for you a speedy recovery and many useful years in the future.

They also desired me to say that they appreciated greatly the splendid influence you had wielded for good for the medical profession since you entered it.

With love and esteem, I am,

Sincerely,
L. B. McBRAYER, M.D.,
Secretary-Treasurer.

April 20, 1929

Dr. A. W. Knox,
Raleigh, North Carolina.
My dear Dr. Knox:-

I desire to extend to you good wishes, appreciation and esteem and love of organized medicine in North Carolina. We miss you at our annual meetings and always wish that you were with us.

May God bless you.

Sincerely your friend,
L. B. McBrayer, M.D.,
Secretary-Treasurer.

April 22, 1929

Dr. L. B. McBrayer, Secretary,
Southern Pines, North Carolina.
Dear Doctor:-

I am deeply touched by the warm-hearted expressions contained in your lovely letter of the 20th instant, which has just come to me in this morning's mail, which reminds me that I failed to answer promptly (because, I suppose, of my disablement which makes me forget many things if I do not attend to them at once), your recent good letter sending me a complimentary renewal of membership in the Medical Society of the State of North Carolina.

I hasten to do so now, and to ask you to inform the President of the Society of my deep appreciation of the compliment.

This incident serves to emphasize a conviction I have long held: that the loving kindness of our friends is the source of one of our greatest earthly joys.

About two years ago—following a protracted influenza and severe asthma—cataract began to form in both of my eyes and has gradually increased so that I read, with difficulty, only newspaper headlines and very large print; and I have also grown quite deaf. But I dwell upon my blessings, for which I am thankful; and I do not fret, but strive to be cheerful and cultivate only smiles. Love to all the boys when you see them.

Sincerely your friend,
A. W. Knox.

FOURTH GENERAL SESSION

WEDNESDAY, APRIL 17, 1929, 8:15 P. M.

BALL ROOM, O. HENRY HOTEL

The Medical Society of the State of North Carolina met in the Ball Room of the O. Henry Hotel, with Dr. Thurman D. Kitchin, President, presiding.

Dr. L. B. McBrayer, Secretary-Treasurer, presented the report of the House of Delegates, which on motion was adopted. (See Report of Nominating Committee, House of Delegates.)

President Kitchin announced that Dr. C. A. Julian, Chairman of the Local Committee on Arrangements, would present the trophies to the winners in the Golf Tournament, and Dr. Julian made the following awards:

Dr. W. D. James, trophy for the low net score.

Dr. J. G. Rayner, trophy for second low net score.

Dr. Julian announced that the two high prizes were tied for and the tie will be played off. He also stated that the prizes were given by four firms in Greensboro, The Vanstory Clothing Company, The Schiffman Jewelry Company, The Odell Company, and The Myers Department Store.

Dr. Patman and Dr. Harrison were also awarded prizes.

The President called for the report of the Committee on Distance Traveled and Length of Stay. Dr. Julian announced that the Johnson & Johnson Company had offered a prize of $25.00 to the member who came the longest distance and stayed the longest time at the meeting, and that the prize was awarded to Dr. N. B. Adams of Murphy, Cherokee County.

Dr. R. B. Davis presented the Report of the Council.

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS

Dr. L. B. McBrayer: Those of you who heard the President's Address will agree that it is one of the ablest and most constructive we have had. It occurs to me that it would add dignity and be a help to the profession of the State in many ways, and not only to the profession but to the people, if this were published in the papers. I, therefore, move that the Secretary be instructed to offer this address to the papers of the State for publication in full only.

This motion was seconded and carried.

INSTALLATION OF OFFICERS

The President asked Dr. Mitchell and Dr. Guy Suiter to escort the new President to the chair.

President Kitchin: Dr. Crowell, before turning this gavel over to you I want to congratulate the Society upon choosing a man so admirably equipped in every particular for this office. The Society in honoring you has honored itself, and it is a genuine pleasure to me to hand you this gavel.

Dr. L. A. Crowell, President: Gentlemen of the North Carolina Medical Society. I appreciate the confidence you have shown in me by naming me your presiding officer for the ensuing year, and I assure you that I am proud of the honor of serving you. At the same time I am not unmindful of the responsibilities and obligations the position entails, and

my feeling of inability to meet them. I shall, however, do all in my power to help maintain the high standards that the North Carolina Medical Society has attained. In this effort I crave your most earnest support and cooperation. Again, I thank you.

The following moving pictures were then shown:

(1). The Valves of the Heart in Action. (By courtesy of the American Heart Association and the Heart Division of the North Carolina Tuberculosis Association.)

(2). The Growth of Cells.

(3). The Birth of the Cancer Cell and the Effect of Radium thereon.

The moving pictures (2) and (3) were secured through the efforts of Dr. H. H. Bass, President of the North Carolina Society for the Control of Cancer, Durham.

The program having been completed and there being no further business, the Society then adjourned sine die.

Dr. Wilburt C. Davison, Dean, School of Medicine, Duke University, had as his guests during the session, Dr. Harold L. Amoss, who has been selected as Professor of Medicine, Dr. Julian Deryl Hart, Professor of Surgery and Dr. Wiley Davis Forbus, Professor of Pathology.

Dr. Amoss is a native of Kentucky and received his academic training at the University of Kentucky and his M.D. and D.P.H. degrees at Harvard. He was at the Rockefeller Institute for ten years and for the past seven years has been Associate Professor of Medicine at the Johns Hopkins.

Dr. Julian Deryl Hart, who is a native of Georgia, a graduate of Emory University and the Johns Hopkins Medical School and has been a member of the Department of Surgery of the Johns Hopkins Medical School and Hospital for the past eight years.

Dr. Wiley Davis Forbus is a native of Mississippi and received his academic training at Washington and Lee and his M.D. at the Johns Hopkins. He has been a member of the Department of Pathology of the Johns Hopkins Medical School and Hospital for the past six years.

These gentlemen were informally received and those present who had the pleasure of meeting them seemed to feel that Dr. Davison had made wise selections.

MOORE COUNTY MEDICAL SOCIETY MEDAL—1928 SESSION

Your committee on the Award of the Moore County Medical Society Medal begs to report that we have given careful consideration to the papers recommended by the committee from each section, that is the committee of three from each section recommends to us the paper in each section which they consider the best paper for that year as per the rules published last year.

The committee then grades the papers recommended by the above mentioned committee from each section and decides the best paper in this group, taking into consideration original work, as mentioned in rules formulated by this committee and adopted by the House of Delegates at the 1928 session.

The committee, having performed its duties and having carefully considered the papers presented, have decided to award the medal for the 1928 session to Dr. P. P. McCain, F.A.C.P., Superintendent of the State Sanatorium, Sanatorium, N. C., for his paper on "The Diagnosis and Significance of Juvenile Tuberculosis."

Respectfully submitted,

W. C. Mudgett, M.D., *Chairman,*
J. M. Parrott, M.D.,
John Q. Myers, M.D.

THE CONJOINT SESSION

OF THE

MEDICAL SOCIETY

OF THE

STATE OF NORTH CAROLINA

AND THE

NORTH CAROLINA STATE BOARD OF HEALTH

WEDNESDAY, APRIL 17, 12:00 NOON

BALL ROOM, O. HENRY HOTEL

Dr. A. J. Crowell, President State Board of Health, Presiding

MEMBERS OF THE NORTH CAROLINA STATE BOARD OF HEALTH

A. J. Crowell, M.D., President ..... Charlotte
Cyrus Thompson, M.D. ..... Jacksonville
Thomas E. Anderson, M.D. ..... Statesville
E. J. Tucker, D.D.S. ..... Roxboro
D. A. Stanton, M.D. ..... High Point
James P. Stowe, Ph.G. ..... Charlotte
John B. Wright, M.D. ..... Raleigh
L. E. McDaniel, M.D. ..... Jackson
Charles C. Orr, M.D. ..... Asheville

EXECUTIVE STAFF

Chas. O'H. Laughinghouse, M.D. ..... Secretary and State Health Officer
Ronald W. Wilson ..... Assistant to the Secretary
C. A. Shore, M.D. ..... Directory State Laboratory of Hygiene
G. M. Cooper, M.D. ..... Director Bureau of Health Education
H. E. Miller, C.E. ..... Chief of Bureau of Engineering and Inspection
F. M. Register, M.D. ..... Director Bureau of Vital Statistics
H. A. Taylor, M.D. ..... State Epidemiologist
George Collins, M.D. ..... Director Bureau of Maternity and Infancy
C. N. Sisk, M.D. ..... Director of County Health Work
Ernest A. Branch, D.D.S. ..... Director Oral Hygiene
F. R. Taylor, M.D. ..... Director Bureau Health Maintenance

The Conjoint Session of the Medical Society of the State of North Carolina and the State Board of Health met in the ball room of the O. Henry Hotel and was called to order by Dr. A. J. Crowell, President of the State Board of Health.

Dr. Charles O'H. Lauginghouse, State Health Officer, presented his annual report as follows:

ANNUAL REPORT OF THE SECRETARY OF THE STATE BOARD OF HEALTH

CHAS. O'H. LAUGHINGHOUSE, M.D.

Mr. President and Members of the Conjoint Session of the Medical Society of the State of North Carolina and the North Carolina State Board of Health:

Provisional figures now available for the past year indicate that the State suffered a regretable increase in its death rate which rose from 11.3 per 1,000 of population in 1927 to 12.3 in 1928. There were several contributing causes.

Every physician in the State is, of course, too well acquainted with the recent epidemic of influenza for me to emphasize its ravages. Suffice it to say that in the short period of four months, November, December, January and February, there were 2,143 deaths reported with influenza as the cause given, and 1,431 from pneumonia. Another contributing cause was the epidemic of measles which swept the State in the early months of 1928 with 60,543 cases reported and 510 deaths. Pellagra showed a gain on the wrong side, there being 847 deaths from this cause or an increase of 159 over the previous year. More people were killed by automobiles by 28, an average of two fatalities each day being almost achieved. Diphtheria and diarrhea in infants also showed some increases. Altogether the losses mean about 3,000 additional deaths for the year as compared with 1927 when a remarkably low death rate prevailed.

While there were losses, yet there were gains in which the physicians of the State may take a justifiable pride. In typhoid fever a new low record was achieved. I remember that it was just a few short years ago when we were putting 500 deaths annually from typhoid fever as the low mark at which to shoot. Last year in North Carolina there were but 184 deaths from this cause with 1,073 cases reported, a decrease of 42 deaths and 207 cases over 1927. Again there was a substantial gain in tuberculosis, the deaths from this cause being 183 fewer than in the previous year. Earlier diagnosis is playing a large part in this continuously successful warfare against this former captain of death, and again our physicians have cause for gratification. The most noteworthy fact for the year, however, is in the markedly low mortality from diphtheria. This disease of childhood moves in cycles. Its rise and fall can be charted with a surprising degree of accuracy well in advance. This past year in North Carolina was due to be a "diphtheria year." Past experience taught us to expect not only the seasonal increase in the incidence of diphtheria in September, but that it would probably reach epidemic stage and affect all sections of the State. There were 3,862 cases reported, a gain of 792 over the previous year, and 325 deaths, an increase of 47 over 1927. No greater compliment could be paid the physicians of North Carolina than those simple figures. First of all, the children of the State have been immunized against diphtheria, thousands upon tens of thousands of them. Nearly all

of this has been done since 1922, which was the last year the disease was epidemic in the State. The figures speak the eloquent story. In the last epidemic year there were 510 deaths, this past year there were only 325. Prompt treatment of diphtheria with antitoxin in sufficient dosage will cure diphtheria but far too often the physician is not called to see the child until it is too late. Immunization eliminates this element of chance and removes diphtheria as one of the dreaded afflictions of childhood. All honor and praise to the physicians of the State for the effective service which they are performing!

There is another picture which I must present to you that is not so pleasing. It is entirely a problem for the profession, and more particularly for each individual practitioner. I have already pointed out that the death rate in North Carolina rose last year by 1 per 1,000 of population. That means approximately 3,000 more deaths than in the previous year. While influenza, pneumonia and measles accounted for part of this rise, yet theirs was only a small part. As a matter of fact nearly all the results of the epidemic of influenza will be charged to the calendar year 1929. What then so materially affected the rate in 1928?

I cannot give you now accurate statistics, for these will not be completed for another sixty days. A provisional study of the death certificates for 1928, however, shows a marked rise in that group of diseases known as the degenerative diseases. In cancer, in heart diseases, in kidney diseases, there are increases which will very largely account for the rise in the death rate. Heart diseases now stand at the top, with kidney diseases a close second. These have displaced tuberculosis and pneumonia as the leaders. Moreover, deaths from this group are increasing more rapidly than decreases are being secured in other causes.

The problem is a medical one in which the State Board of Health can assist in one way only. If these bad hearts, these affected kidneys, these beginning cancers can be found early enough, then treatment can be prescribed with assurance that beneficial results will follow. The State Board of Health can endeavor to popularize periodic health examinations, thereby bringing to the physician a large number of people seeking this service. The State Board of Health cannot make these examinations, nor does it purpose to try. That is the duty of the individual physician. Neither can the State Board of Health give treatment to those found needing it. That again is the duty of the individual physician, and his alone. I can only call to your attention the fact that here lies a field of service to your State and your fellow-man that cries aloud for action. Men and women in North Carolina are dying in what should be the prime of life from causes that could and should be alleviated. The chiefest of these now are diseases of the heart, and of the kidneys, and cancer.

From the viewpoint of communicable diseases there is every reason for encouragement. This is particularly true with regard to the cooperation of the profession in the effort to control and eradicate these diseases. It is an old saying and a true one, that in order for public health officials

to do effective and constructive public health work they must know when, where and under what conditions cases of communicable diseases are occurring. That the individual physicians of the State are appreciating this fact is shown by the more complete reporting which they are now doing, thereby helping both their county and State officials. During the past year 1,719 physicians reported regularly, this number representing 75 per cent of the total membership of the profession.

Cases reported for the year were as follows:

Diphtheria	3,826
Scarlet Fever	2,828
Smallpox	2,419
Typhoid Fever	1,073
Measles	60,543
Whooping Cough	5,002
German Measles	172
Septic Sore Throat	104
Chickenpox	4,695
Epidemic Meningitis	21
Infantile Paralysis	51
Ophthalmia Neonatorum	6

Since the last conjoint session of the Society and the Board there has been no changes in either policies or methods of administration on the part of the Board. A review of the work of the Board will be brief, and is made with the idea of keeping fresh in the mind of the profession the many and varied activities.

Probably that division of the Board which most intimately affects the greatest number of our physicians is the Laboratory of Hygiene. It is highly pleasing to the Board that more and more the profession is utilizing the splendid service which is available through the Laboratory. It is a source of pride to the Board to know that our Laboratory is ranked among the best in the United States, and its director, Dr. C. A. Shore, is without a superior in his special field. Briefly the work of the Laboratory for the past year is shown as follows:

Diagnostic examinations totaled 69,951 as follows:

Wassermann	48,250
Analyses of water	4,860
Intestinal parasites	1,778
Rabies, 415 positive, 794 negative	1,209
Diphtheria	5,140
Vincent's Angina	403
Gonococci	1,951
Tubercle Bacilli	2,549
Malaria	864
Miscellaneous	2,947

Biological products were distributed as follows:

Diphtheria antitoxin (units)	143,325,000
Tetanus antitoxin (units)	16,558,500
Antirabic treatments	1,168

Typhoid vaccine (doses)	746,786
Toxin-antitoxin (doses)	360,307
Smallpox vaccine (doses)	466,495
Pertussis vaccine (doses)	52,055
Ampules neoarsphenamime	31,230
Shick tests	40,700
Shick control tests	17,600
Syringes scarlet fever antitoxin	207
Dick tests	640

Also a small number of other vaccines and sera.

In the distribution of biologicals the point has been reached where very little diphtheria antitoxin or tetanus antitoxin is being used in the State except that manufactured by the Laboratory of Hygiene. For the convenience of the physicians and the public the druggists of the State have been handling these two products without profit, in fact at a real financial loss. The Board most thoroughly appreciates the splendid cooperation on the part of the druggists of the State and feels that this injustice which they have endured without complaint should be compensated. The retail price of diphtheria antitoxin will be, therefore, raised to fifty cents per syringe, with the price to the druggist remaining at twenty-five cents as heretofore. The price of prophylactic tetanus antitoxin will be raised to seventy-five cents, the price to the druggist remaining at fifty cents. These two adjustments will enable the druggists to continue rendering a public service without personal loss.

The rabies situation in the State remains about the same, North Carolina being one of the states showing greatest infection. The year 1925 had the greatest number of rabid animals and the greatest number of persons bitten by rabid animals. Since that year there has been a slight gradual decrease due to municipal regulations of the dog problem and to a fairly widespread vaccination of dogs.

Little more reduction can be hoped for by means of vaccination, but complete eradication could be accomplished by the confinement of all dogs to the premises of the owner with certain reasonable exceptions. Our law-making bodies will not consider such a measure until there is some public demand for it and the medical profession is best qualified to educate the public in this as well as in other public health matters. Rabies is an important public health problem not so much on account of its prevalence, as because we have such a unique opportunity for complete extermination.

It will not be amiss to call attention to a law which has long been on our statute books but which is seldom observed. This law seeks to compel the killing of all dogs which have been bitten or which are supposed to have been bitten by a mad dog. The law is constantly and deliberately violated and often the dog-owner receives professional advice that the exposed dog can be protected by one dose of canine rabies vaccine. Such practice deserves the condemnation of all medical men.

In the year 1928 there was a sixty-five per cent increase in the use of the State Laboratory of Hygiene diphtheria antitoxin above that of the previous year. The present year will probably show less diphtheria but the chief hope of permanent decrease in the incidence of this disease is in the more extensive use of immunizing toxin-antitoxin mixture, especially in children of the pre-school age.

It is difficult for the public health officer to reach these young children and their immunization is peculiarly the field of the family physician. He is urged to bear in mind that the toxin-antitoxin mixture can be secured from the laboratory at all times free of charge.

Another division with which most physicians are in daily contact is that of vital statistics, where certificates of births and deaths are filed. These certificates are carefully studied and tabulated so that we may have accurate information with regard to the health conditions of our people. There were 81,948 birth certificates and 37,619 death certificates filed last year. In this connection may I call your attention to the fact that since January 1 there have been a large number of changes in local registrars. The term of office of all local registrars expired January 1. All are appointive, those for the towns and cities being named by the mayor and those for the townships being named by the Chairman of the Board of County Commissioners. Altogether there are nearly fifteen hundred. For various reasons there was the greatest number of changes we have ever had, probably two-thirds or more being new appointees. Because of this great number of changes there has been considerable confusion. A revised list of local registrars is being sent to all physicians, and I earnestly request that each physician make sure that he is sending his certificates to the correct local registrar.

The division of epidemiology has handled reports of 85,217 cases of contagious or infectious diseases. It is interesting to note that of these 50,362 were reported by physicians, 2,006 by nurses, 5,087 by teachers, and 27,762 by householders. The state epidemiologist has assisted in investigating several local epidemics, particularly a milk-bourne epidemic of diphtheria in one county and one of typhoid fever from a similar source in another county. The division has also assisted local physicians in a number of counties in immunization campaigns against typhoid fever and diphtheria.

Right here permit me to call your attention to the prevalence of pellagra in the State. Last year there were 847 deaths from this cause in North Carolina. The number has almost tripled in ten years. The State Board of Health feels that it is necessary to obtain more complete data and it is therefore adding pellagra to the list of reportable diseases. The prevalence of the disease is strictly a medical problem. Pellagra is conceded by most physicians to be of nutritional origin. While not transmissible, the Board of Health is interested in it because it lessens resistance, produces insanity, and year by year kills an increasing number of citizens. We cannot cope with it except through the assistance of individ-

ual physicians who treat individual cases. And even with this cooperation, we realize that the greatest assistance we can give in lessening the incidence of pellagra is to make it reportable, so that each case can be located, and carry on an intensive educational campaign emphasizing the value of diet in prevention.

There is one further thing we can do, and this can be directly beneficial to the physician in handling the individual case. Not only is it generally recognized that the prevention of pellagra is a matter of diet, but also that its cure also depends upon a correct diet. To every family afflicted with a case of pellagra direct assistance can be given in the matter of diet through the cooperation of Miss Mary E. Thomas, nutrition specialist of the extension service of State College at Raleigh. She will gladly give instruction, both general and special, to any family in which a case of pellagra exists, provided request is made for this instruction by the attending physician. In those counties where there are home demonstration agents Miss Thomas will endeavor to have these agents give information as to nutrition by personal visits and by demonstration when practicable in those families where pellagra exists. This service is offered as an efficient means of aiding the physician to have his directions as to diet followed. Any physician desiring this assistance should advise Miss Mary E. Thomas, State College, Raleigh.

The section on Pediatrics of this Society deserves commendation for the excellent symposium on the high infant mortality in the State. North Carolina's birth rate last year was 27.9 per 1,000 of population, a rate lower than for the previous year. Reports from other states indicate that there was a generally lower birth rate throughout the country. It is probable, therefore, that again we had the highest birth rate of any state in the Union. If so, 1928 would be the ninth consecutive year that this State had maintained the lead in this respect. At the same time we had a distressingly high infant mortality rate, very nearly the highest in the entire country. In the effort to reduce this high rate the Board's division of Maternity and Infancy has continued and intensified its educational efforts, and in this it has received splendid cooperation on the part of the medical profession. The correspondence course for expectant mothers now has an average enrollment of 16,000, nearly all of whom are referred by their family physician. Can we not make it 80,000? State financial assistance is being given to twenty-one counties for the employment of county maternity and infancy nurses, and in addition some phase of maternity and infancy work was carried on through staff nurses in twenty-four other counties. The standard course of instruction for midwives is now in operation in 34 counties, the midwives being required by the county board of health to take such instruction and demonstrate at least to a degree their fitness to practice. Altogether more than twenty-five hundred midwives have been enrolled in such classes, and more than one thousand have been eliminated as unfit. Probably the most important development of the past year in this division of work has been the promo-

tion and organization of pre-school clinics. These are for the examination and immunization of children ready within a few months to enter school for the first time. In nineteen counties last spring such clinics were organized and conducted with the assistance of the Board. This spring the number probably will be doubled. The policy with respect to this work is to assign one or more experienced nurses to assist local physicians and school officials. The examinations and follow-up work where such is indicated thus becomes a responsibility of the local physician and community, and it is being splendidly met.

As a matter of routine we are now acknowledging the receipt of all birth certificates with a letter to the mother congratulating her, advising her of the fact that the most dangerous period in the life of her baby is the first few months, and urging the mother to place herself and her baby under competent medical care. The letter reads in part:

"Approximately 80 babies of each thousand born in North Carolina die before reaching one year of age. A great portion of these deaths are absolutely preventable. The most effective method that the mothers of North Carolina can adopt to prevent these deaths is to place themselves and their babies under the constant and regular observation and care of a competent physician. We most urgently advise you to go to your physician with your baby not less often than once each month during the first, and most critical, year of its existence."

"In addition to regular visits to your physician, we wish to direct your attention to the fact that your State Board of Health has excellent literature prepared for the use of mothers in the care of themselves and their babies which can be secured without charge."

The letter closes with the following admonition:

"Remember three things:

"See your doctor once a month.

"Send for publication on infant care and child care.

"Breast feed your baby. The best fed baby is breast fed baby."

Enclosed with this letter is a franked postcard carrying a list of available publications to be had free from the Board. The result has been a tremendous expansion in the distribution of this educational literature. For example, for the twelve months ending June 30, 1928, there were distributed 127,290 pieces of literature of this nature. For the next six months, ending Dec. 30, 1928, a total of 159,735 pieces were distributed.

Closely allied with the work of the maternity and infancy division is that of medical inspection of schools. This work is being conducted on the basis of an inspection of all school children every three years except in those counties having local health departments where more constant supervision can be maintained. A corps of eight experienced nurses are employed for this work. During the past year they did inspection service in 26 counties, examining 101,581 children. In these children common defects were discovered as follows: hearing 1,750, vision 10,514, throat 38,905, teeth 31,543, miscellaneous, others 18,869. Of the defects classified as

miscellaneous, the greater portion were nutritional as indicated by ten per cent or more underweight for height and age, using the Bird-Baldwin tables as the standard. To the parent of each child was sent a notice indicating the opinion of the nurse and advising prompt medical or dental attention.

As a follow-up of this inspection work the Board conducted tonsil and adenoid clinics in 19 counties in accordance with plans approved by the the Eye, Ear, Nose and Throat Section of this Society. These clinics were conducted in the following counties: Dare, Currituck, Perquimans, Chowan, Washington, Tyrrell, Greene, Jones, Onslow, Rutherford, Cherokee, Transylvania, Polk, Burke, Yadkin, Davie, Halifax, Gates, Northampton. A total of 1,875 children received operative treatment.

Dental clinics were conducted in 33 counties with 32,943 children treated. A field force of seven dentists and a director is maintained for this work.

In this connection you will recall that at the Conjoint Session last year attention was called to the splendid cooperation on the part of the dental profession, and to the further fact that arrangements were being perfected to carry into effect a movement sponsored by the State Dental Society for placing in each teacher training institution of the State a course in Oral Hygiene which would be given credit as other courses of study. The Board was requested to inaugurate this work with its director of Oral Hygiene. The Board's director found himself unable to carry forward this work, so beginning January 1 the Board secured the services of Dr. Ernest A. Branch to fill this position. He brings to the work ripe experience and a passionate love of the job that is bringing to the Board highest praises for his services wherever he goes.

During the year Dr. G. M. Cooper has continued to edit *The Health Bulletin* which now goes each month to 25,000 homes. This number could easily be more than doubled if funds were available for the purpose. No state in the Union has a more attractive or helpful popular health publication. Scientifically sound, yet couched in language understandable to the masses of the people, it reflects credit upon the Board and the profession generally.

Our mobile motion picture unit has operated in twelve counties and shown to 37,400 people. Extra showings were given before the students of the College for Women in Greensboro and the students of Dr. Davison's hygiene classes at Duke University. It is my opinion that through this medium the lessons of sanitation and personal hygiene can best be taught, and I trust that this particular work can be enlarged to reach a much greater portion of our people each year.

The work of the bureau of Sanitary Engineering and Inspection through the year has embraced the following groups of activities: (1) Sanitary inspection, and enforcement of the sanitary privy law, the hotel and cafe inspection law, and the laws regulating jails and convict camps; (2) Water Supply and Sewage Disposal which embraces: (a) promotion

and review of plans for municipal, State institution, school and other projects, and maintenance and operation supervision; (b) scientific investigations of sewage treatment problems with extended field and laboratory studies of stream pollution problems concerned with the disposal of sewage and industrial wastes; (3) Food protection through, first, the promotion and improvement of milk sanitation and, second, sanitary regulations of the shellfish industry.

On April 1st that branch of water work consisting of monthly bacteriological examination of water supply samples was consolidated with the other water supply work of the bureau.

On April 1st, the enforcement of the law requiring sanitary practices in the manufacture of bedding was taken up by the Bureau.

In view of the activities embraced, most of which have become well established units, only certain groups in which developments of especial interest have occurred during the year will be individually considered. The past year has been a period of most harmonious public relationship in all of the activities by which the State serves the public through this bureau. Even in sanitary privy law enforcement, where it is next to impossible to please everybody, there has been but one complaint, which was promptly and satisfactorily adjusted.

While the work of this division covers a wide scope of law enforcement activities, a tremendous economic as well as health protective service can be rendered through more extensive scientific study of water supply, sewage and waste disposal, and stream pollution. The principal development of the bureau in the last year has been in this connection.

In connection with these problems greater unity of action and cooperation with other State agencies have been effected, together with securing the active interest and cooperation of the municipalities and industries in working out a solution of existing and means for prevention of future stream pollution problems. Thus North Carolina's heritage of abundant supplies of safe clean water may be preserved, in a manner and at a cost that will not hamper, but will promote municipal and industrial development.

In this connection extensive studies of waste and sewage pollution of the Haw River basin near Greensboro, the Roanoke River at Weldon, and the Pigeon River at Canton, have been conducted cooperatively with the Conservation Commission and the cities and industries concerned.

Broad scale scientific investigations of the condition and efficiencies of sewage treatment plants for Gastonia, Henderson and other cities, have been made. Several of these cities were faced with suits, and this service aided in disposal of court actions with more even handed justice and is serving as a guide to proper effective and economic solution of the problems.

During the year, the bureau has been called upon frequently by the budget bureau for engineering advice and assistance in the matter of State institution water supply and sewerage problems. Engineering service,

including design and supervision of the construction of a number of such improvements has been rendered with advantage to the institutions and a material saving to the State. By virtue of investigations, surveys and preparation of comprehensive cost estimates the last legislature had definite information as to the needs of the institutions in this connection, and the consequent necessary appropriations. We are advised that appropriations were made throughout in accordance with these recommendations and estimates.

When this Society last met in annual session I was able to report that, in accordance with resolutions adopted by the Society, the Board had received financial assistance from the Rockefeller Foundation so that it was able to begin the work of promoting periodic health examinations. Dr. F. R. Taylor of High Point was secured for this service, beginning his duties February 1. Dr. Taylor has now covered sixty-seven counties in the State, including all sections except the extreme northeast. The work has been largely a matter of individual conference with physicians. The fact has been constantly stressed that the examination of apparently healthy persons in order to detect slight defects and correct them before serious degenerative processes arise must increasingly come to be recognized as a major feature of the practice of medicine.

Demonstration clinics have been held in 47 counties selecting for examination, so far as possible, two groups of apparently healthy persons —physicians themselves, and active community workers who will spread the idea of periodic health examinations. In the latter group have been included newspaper editors, women active in club work, ministers who have shown an interest in community health improvement, civic club leaders, and so on.

In these demonstration clinics 420 persons have been examined, including 75 physicians. No attempt has been made to examine a large number of persons in any single community. Rather the idea has been to interest the practicing physician to do this work, and the clinics have been merely demonstrations of the need of such work and of the technique. In all cases where public talks have been given, or special interviews held with persons who are in a position to give the movement wide publicity, which has been done in 41 counties, the people have been urged to go to their own physicians to have this work done.

The first 400 examinations have been analyzed and the results tabulated in detail. A summary of this data shows that in this number 1,380 defects were found, including both physical defects and various forms of unhygienic living calculated to expose the individual to some excessive stress or strain. This is an average of 3.45 defects per person. A general classification of the defects found shows the following:

		Per Cent
Skin	88 cases involving	22.0
Eye	158 cases involving	39.50
Ear, Nose, Sinuses and Throat	133 cases involving	33.33
Mouth, Teeth and Tongue	115 cases involving	28.75

Bronchi, Lungs and Pleura	33 cases involving	8.25
Blood	30 cases involving	7.50
Circulation (including heart)	79 cases involving	19.75
Postural defects, spine, etc.	30 cases involving	7.50
Abdomen	101 cases involving	25.25
Rectum	52 cases involving	13.00
Urinary organs	50 cases involving	12.50
Male reproductive organs	59 cases involving	14.75
Female reproductive organs	31 cases involving	7.75
Metabolism	119 cases involving	29.75
Endocrines	17 cases involving	4.25
Extremities	100 cases involving	25.00
Nervous System	17 cases involving	4.25
Harmful Habits	136 cases involving	34.00
Undiagnosed Abnormalities	28 cases involving	7.00
Chronic General Infections (not included under other headings)	4 cases involving	1.00

I am confident that you will be interested in a brief comment by Dr. Taylor on these findings. He says:

"Venereal diseases are not included in this survey because to get any accurate idea of them laboratory work often requiring days to get done is necessary, and we could not stay long enough in any locality to do this or to get the reports. Wassermann tests were often requested of the State Laboratory but the reports were sent to the physician of the person examined, rather than to us. Similarly, repeated prostatic massage was suggested for diagnosis when latent gonorrhea was suspected.

"It is regretable that we did not keep a record of sex incidence of those examined, as the apparently low percentage of involvement of the female reproductive organs is due largely to the fact that relatively few women were examined.

Prolonged acquaintance with those examined would almost certainly have given a much larger number of mild nervous troubles—conditions that do not appear in a single examination by a stranger.

"By 'undiagnosed abnormalities' we mean cases in which definitely abnormal findings were obtained, such as fever, albuminuria, etc., yet for which a cause could not be determined, in the time at our disposal. No doubt a number of abnormalities existed which we did not detect at all.

"The two single defects which were incomparably the most frequent were uncorrected refractive errors, and bad teeth. Our figures showed 144 cases of refractive errors which were not corrected, or 36 per cent of all examined, and 110 cases of bad teeth, or 27.5 per cent. Examination by an opththalmologist or a dentist, respectively, would no doubt increase these figures. Our patients were for the most part rather highly intelligent persons, usually of the type who use their eyes for a good deal of close work, and who take better care of their teeth than does the average person. Were a larger percentage of the illiterate and ignorant who read little or none, and who take little or no care of their teeth included, we

suspect that bad teeth might occupy the first place and refractive errors second, though that is merely speculative."

Very closely allied with this work which Dr. Taylor is doing is that of the North Carolina Committee of the American Society for the Control of Cancer. You will recall this Committee was organized at the meeting at Pinehurst last year with Dr. H. Hartwell Bass of Durham as Chairman. No man could have worked harder or more efficiently during this past year than has Dr. Bass, and the profession especially is under a deep obligation to him for this splendid service. Not only has Dr. Bass given freely of his time and energy, but from his own pockets he has defrayed the necessary expenses except for a donation of $150.00 from a public spirited layman and $350.00 in postage from the State Board of Health. This work of education concerning cancer has included twelve lectures to Metropolitan Life Insurance Company agents, twelve lectures to county and district medical societies, twelve radio talks, fifteen addresses to civic clubs and schools, a series of twelve weekly articles on cancer published in 231 newspapers for twelve consecutive weeks, and 325,000 bulletins and pamphlets on cancer control supplied by the American Society for the Control of Cancer and the Metropolitan Life Insurance Company were distributed. Letters were sent to all medical societies in the State, both county and district, requesting that each include in its program papers on cancer control sometime during the year. A number have complied with this request. Similar letters were sent to all the Woman's Clubs in the State, requesting that some time during the year they secure some physician to address the club on this subject. In addition educational reels on cancer were secured and shown as a part of the regular program of the State Board of Health in the schools throughout the State.

Because of the very effective work being accomplished by Dr. Bass, I am most happy to announce that the recent General Assembly made a special appropriation of $2,500.00 annually for the next two years to assist in caring for the expenses incurred. The bill making this appropriation was introduced in the House by Dr. J. E. Hart, who for a number of years has served as the representative from Anson County, and received the united and hearty support of the other members of the profession in the House, and of Dr. H. B. Ivey of Wayne, the only physician serving in the Senate. It received the unanimous approval of the joint House and Senate Committee on Appropriations. Inasmuch as this was legislative action of rather an exceptional nature I believe you will be interested in the bill as introduced and enacted into law.

"Whereas, the deaths from cancer in North Carolina have been steadily increasing in number, year by year, for a period of years; and

"Whereas, the deaths in North Carolina from this disease cause an economic loss in excess of fifteen million dollars annually; and

"Whereas, in connection with the annual meeting of the Medical Society of the State of North Carolina held at Pinehurst in April, 1928, a North Carolina division of the American Society for the Control of Cancer was organized with the following executive committee elected: Dr. Charles O'H. Laughinghouse, Raleigh, President;

Dr. L. A. Crowell, Lincolnton, Vice-President; Dr. A. C. Bulla, Raleigh, Secretary-Treasurer; Dr. W. C. Davison, Durham; Dr. W. S. Rankin, Charlotte; Dr. Wm. DeB. MacNider, Chapel Hill; Dr. Thurman Kitchin, Wake Forest; Dr. John W. MacConnell, Davidson; Dr. Isaac H. Manning, Chapel Hill; Dr. L. B. McBrayer, Southern Pines; Dr. E. Delia Dixon Carroll, Raleigh; Dr. Anna M. Gove, Greensboro; Dr. John MacRae, Asheville; Dr. Marjory Lord, Asheville; Dr. W. D. James, Hamlet; Dr. H. B. Ivey, Goldsboro; Dr. L. S. Booker, Durham; Dr. F. R. Taylor, High Point; Dr. John T. Burrus, High Point; and Dr. H. Hartwell Bass, of Durham, North Carolina, were selected as State Chairman for North Carolina for the purpose of conducting an extensive educational campaign in the State in cooperation with the North Carolina State Board of Health and the Medical Society of the State of North Carolina for the purpose of acquainting the citizenship of the State with the known scientific facts about cancer, its prevention and its treatment; and

"Whereas, the said State Chairman, Doctor H. Hartwell Bass, is giving his time and energy to this cause without compensation and at considerable expense to himself:

"Therefore, Be It Enacted by the General Assembly of North Carolina—

Section 1. The sum of twenty-five hundred dollars ($2500.00) is hereby appropriated annually for the fiscal years 1929-30 and 1930-31 to the North Carolina Committee of The American Society for the Control of Cancer of which Doctor H. Hartwell Bass of Durham is State Chairman for the purposes of paying necessary expense of clerical assistance, postage, stationery, travel expense, and other incidental expenses: Provided, that no part of the sum herein appropriated shall be used as payment of salary to the State Chairman of the Committee or the salary of any member of the Committee.

"Section 2. This act shall be in force from and after its ratification."

One thing further, and I shall have covered the activities of the Board for the year. In the development of county health departments we have been practically at a standstill. There were no funds for expansion in this particular field of work. Carteret County discontinued its health department and departments were organized in Moore and Gaston counties. There are now 38 counties to which the State Board of Health is contributing financially for the support of county health departments as follows: Beaufort, Bertie, Bladen, Brunswick, Buncombe, Cabarrus, Columbus, Craven, Cumberland, Davidson, Durham, Edgecombe, Forsyth, Gaston, Granville, Halifax, Henderson, Johnston, Lenoir, Mecklenburg, Moore, Nash, New Hanover, Northampton, Pamlico, Pitt, Randolph, Richmond, Robeson, Rowan, Rutherford, Sampson, Surry, Vance, Wake, Wayne, Wilkes, and Wilson.

The total budgets of these county health departments amounted to $427,737. Outstanding among the items of work performed were: quarantining of 56,929 cases of contagious diseases; vaccinating of 89,126 individuals against smallpox, 93,736 against typhoid fever, and 41,398 against diphtheria; the administering of 31,827 treatments for venereal diseases in indigents; the examination of 97,434 school children. As a result of these examinations correction of physical defects discovered were secured through the family physicians or specialists as follows: tonsil and adenoid operations, 3,782; dental treatments, 24,562; refractive errors, 1,132; orthopedic corrections, 552; and nutritional corrections, 4,159.

The recent General Assembly made available additional funds for the expansion of county health work during the next biennium. I am

hopeful that this expansion may be along two distinct lines. The first, and by all means the more important, should be an improvement in quality of service rendered, and efficiency of administration. Secondly, the extension of such service in that group of counties not heretofore organized.

Right here is where the physicians of the State can render an inestimable service both to themselves and to their counties. Consider, please, the organization of the county board of health as provided by law. There are five members. The chairman of the county board of commissioners, the superintendent of public instruction, the mayor of the county seat town are members of the county board of health by virtue of their office. These three elect two registered physicians of the county to complete the membership of five. This board is the guardian of the health interest of its county, and by law there is lodged in the discretion of this county board of health the fullest possible authority to take such action as may be deemed wisest. The two physicians who are on this board have the knowledge, and, if they will, can dominate and direct the policies of the board. Where a county health officer is employed he is the officer of the county board, subject to its direction as to what he shall do, aside from certain specific duties laid upon him by statute. If the physicians who are serving on these local boards would realize their power and responsibility I feel confident that the problem of more satisfactory and efficient service on the part of the health officers would be solved.

In the expansion of this service into counties not heretofore organized the members of the profession can again be of untold help. The State Board of Health takes the position that the physicians of any county are the ones in position best to understand the health needs of that county, and to advise as to ways and means of best serving the county. Therefore the first consultation with regard to possible development of organized public health work in any county will be with the physicians of the county. Their advice will be sought, and their approval will be held necessary for any proposed plans. The responsibility is local and personal, the State Board of Health can only assist.

In the 1929 session of the General Assembly there was little legislation affecting the profession or the Board of Health. In the House there were seven physicians serving as county representatives, and one in the Senate.

This Society a year ago at Pinehurst passed resolutions requesting legislation to prevent rabies. In accordance with those resolutions we drafted the following bill:

"The General Assembly of North Carolina Do Enact:

"Section 1. Every dog when off the premises of its owner or custodian shall be securely muzzled; provided, this Act shall not apply to a dog in leash in charge of owner or custodian; and, provided further, that this Act shall not apply to a dog hunting when accompanied by its owner or custodian.

"Sec. 2. All county game wardens and their deputies are specifically charged with the duty to kill all dogs found running at large which are not securely muzzled, or

are on a leash in charge of owner or custodian, or are hunting, accompanied by owner or custodian; and any citizen may kill any dog not securely muzzled as above provided if found running at large.

"Sec. 3. All laws and clauses of laws in conflict with this Act are hereby repealed.

"Sec. 4. This Act shall be in force from and after June 30, 1929."

The State Association of Veterinarians also went on record in similar resolutions, and a committee of veterinarians drafted a bill making the annual vaccination of dogs compulsory.

After consultation, Dr. S. A. Alexander, a veterinarian serving as representative from Union County, agree to introduce both the muzzling bill and the vaccination bill. When these two bills came before the House Committee on Health for hearing the muzzling bill was given an unfavorable report while the vaccination bill was ordered reported favorably. When this bill reached the floor of the House on second reading it was tabled by an overwhelming vote, thereby ending any chance for legislation looking to the eradication of rabies. In assisting in the effort to secure legislation of this character special credit should be given a committee of the Mecklenburg Medical Society.

Through the efforts of the dental profession an Act was passed for the licensing of mouth hygienists to teach Oral Hygiene in the public schools.

The legislature created a Barbers' Examining Board and added to the duties of the State Board of Health the sanitary inspection of barber shops in towns of 2,000 population and over.

As is usual, there was an attempt made to make a physician by legislative fiat, this time the proposal being to give limited license to a citizen of Madison County. The proposal was defeated.

In the matter of appropriations, the General Assembly was liberal to the State Board of Health, though not granting the full amount requested in the Board's budget for the biennium. For the purposes of the Board an annual appropriation of $483,970 was made. In addition there was $2,500 annually for cancer control, and $5,000 for the first year and $10,000 the second year for orthopedic clinics conducted by the vocational rehabilitation division of the State Department of Education.

I cannot close the report of my stewardship to you without mention of the fact that the civic and social clubs of the State, particularly the Parent-Teacher Association and the various women's clubs have given very generously of themselves to the furtherance of the purpose for which the State Board of Health was created. North Carolina's Federation of Women's Clubs won the national prize last year for the best health work done by any Federation of Women's Clubs in the United States. The prize was given by the American Public Health Association and was in the form of a scientific health survey for some county in North Carolina to be decided upon by the State's Federation of Clubs. This survey has been completed in one of the best eastern counties of the State and submitted to the Board of Health a few days ago. It is destined to give material assistance in the future to the medical profession of North Carolina and to the health work of this State. An expression of apprecia-

tion by this Society to North Carolina's Federation of Women's Clubs would be a most deserving thing to do.

Lastly, I wish to express grateful appreciation on the part of the entire personnel of the Board of Health for the assistance given us by the medical profession of North Carolina. No rifts, no misunderstandings, have been evidenced. No accusations of neglect, no charges of lack of faith have come from any physician to the Board of Health during the fiscal year we are just ending. The medical men elected to the General Assembly, both in the House and in the Senate, were not only interested in the purposes that would further the health work of the State but they were active, very active, in giving us every assistance possible to give. We are grateful to you, gentlemen, more grateful than you can ever know and we shall continue to keep the faith with you to the very best of our ability.

DISCUSSION

The report was discussed by Dr. J. M. Templeton, and, on motion, was adopted.

On motion, a vote of thanks was extended to Dr. Laughinghouse for his excellent report.

NEW BUSINESS

Dr. A. S. Root, Raleigh, stated that the Wake County Medical Society had unanimously adopted some resolutions which it desired to lay before the Conjoint Session and had appointed the following Committee to present them: Dr. H. B. Haywood, *Chairman,* Dr. Z. M. Caviness, Dr. E. D. Dixon Carroll, Dr. A. S. Root, Dr. C. O. Abernethy.

Dr. Root then read the following resolutions and moved their adoption:

"Raleigh, N. C., April 15, 1929.

"Be it resolved by the Wake County Medical Society:

"1. That we endorse Dr. C. A. Shore and the policies of the State Laboratory of Hygiene as carried out by him; and

"2. Be it further resolved that we condemn the removal of the Bacteriological Examination of the Water Supplies of the State from his department and its transfer to the supervision of an engineer; and

"3. Be it further resolved that these transactions be brought before the Governor of the State and the State Medical Society for its endorsement.

"We ask that the work and service of the State Laboratory of Hygiene, so ably directed by Dr. C. A. Shore, be allowed to expand rather than be limited.

"Passed unanimously by the Wake County Medical Society.

"The following committee was appointed to present these resolutions to the Governor, and the State Medical Society for their endorsement.: Dr. H. B. Haywood, *Chairman;* Dr. Z. M. Caviness, Dr. E. D. Dixon Carroll, Dr. A. S. Root, Dr. C. O. Abernethy."

On motion by Dr. E. D. Dixon Carroll, duly seconded, the word "deplore" was substituted for the word "condemn" in the resolution.

Dr. E. Delia Dixon Carroll seconded the motion and spoke to adopt the resolutions, which were also discussed by Dr. Cyrus Thompson, and President Crowell. Dr. Laughinghouse, State Health Officer, then asked Dr. C. A. Shore and Mr. H. E. Miller to make a statement in regard to the change proposed. The matter was then discussed by Dr. Laughinghouse and by Drs. W. S. Rankin, C. O. Abernethy, John B. Wright, J. M. Templeton, and James M. Parrott, and again by Dr. Carroll. Dr. Parrott then offered the following substitute motion:

That the resolutions presented by the Wake County Medical Society be referred to the State Board of Health with the request that if, in their judgment, it seems wise to reverse their decision, after hearing our views, they do so; and that, further, we heartily endorse Dr. C. A. Shore in every respect and in every particular of his work; and that we recommend the furtherance of Dr. Shore's health activities and favor an increased appropriation for his work.

Dr. Parrott's substitute motion was seconded and, on being put to vote, was carried.

Dr. W. S. Rankin read the following resolution, which, on motion of Dr. John B. Wright and Dr. Cyrus Thompson and others, duly seconded, was carried without a dissenting vote.

RESOLUTION

Condemning Recent Departure from Established and Orderly Processes Of Government in Dealing with Complaints Against the Administration of Important Public Institutions.

"Whereas the medical profession of the State, because of its special training and interests, has a civic responsibility, over and above that of the average citizen, for those public agencies and institutions which are concerned with the prevention, treatment, and cure of such prevalent diseased conditions as orthopedic defects, tuberculosis, feeblemindedness and insanity; and,

"Whereas the work of the said agencies and institutions is of a highly technical and professional character; and,

"Whereas the said agencies and institutions are entrusted with the expenditure of more than one-eighth of the State's budget and with the care of more than five thousand unfortunate inmates; and,

"Whereas the direction and management of the said agencies and institutions constitute an exceptionally important subdivision of the executive branch of the State Government, the direction of the said agencies and institutions being under boards of directors appointed by the Chief Executive of the State, and their management under superintendents selected and supervised by the several boards of directors; and,

"Whereas the lines of administrative responsibility and considerations of official courtesy, respect and confidence require, as an orderly process and sound practice, that grievance against the management of the said

agencies and institutions be brought first before the board of directors of the agency or institution against which complaint is made and then, if satisfaction is not obtained, to the Chief Executive whose agent the board is and then, if satisfaction is not obtained, appealed from the executive to the judicial branch of the State Government; and

"Whereas a reversal of this orderly process of appeal, ignoring or circumventing the executive agencies responsible for the management of state agencies and institutions and resorting at once to the courts, results in a conspicuous display in the daily press of serious charges against important institutions which are read by a large part of the reading public that may fail to read their complete refutation and so tends to impair public confidence in the said institutions and thus curtail their usefulness; and,

"Whereas the aforesaid violation of orderly and established practice in making complaint against the management of a state institution makes it necessary for the management of an institution to incur heavy expenses in order to safeguard his or her reputation and so makes the task of boards of directors of the same institutions more difficult in persuading well-qualified executives to assume the responsibility for institutional management; now, therefore

"BE IT RESOLVED by the Conjoint Session of the North Carolina State Board of Health and the North Carolina State Medical Society that this body, here and now, records its vigorous protest against the recent encroachment of the judicial on the executive branch of the State Government prior to its having been made to appear that the executive bodies responsible for the direction and management of the State Institution against which certain complaints (subsequently refuted) were made were either powerless to correct the alleged grievance or were untrustworthy."

Dr. W. S. Rankin moved that the Secretary be instructed to send a telegram to Dr. W. D. Pemberton, of Concord, who is ill and unable to attend, expressing regret for his illness and hope for his recovery. This motion was seconded and carried.

ELECTION OF MEMBERS OF STATE BOARD OF HEALTH

President Crowell announced that the terms of office of two members of the State Board of Health, namely, Dr. Thomas E. Anderson and Dr. L. E. McDaniel, expired at this meeting and asked for nominations. The following nominations were made:

Dr. Fred M. Hanes, Winston-Salem;
Dr. Joseph B. Greene, Asheville;
Dr. L. E. McDaniel, Jackson;
Dr. Thomas E. Anderson, Statesville.

On motion, the nominations were closed. On the second ballot Dr. Anderson and Dr. McDaniel were re-elected.

There being no further business, the Conjoint Session then adjourned sine die.

SCIENTIFIC SECTIONS

SECTION ON GYNECOLOGY AND OBSTETRICS

SECTION ON PUBLIC HEALTH AND EDUCATION

SECTION ON CHEMISTRY, MATERIA MEDICA, AND THERAPEUTICS

SECTION ON PRACTICE OF MEDICINE

SECTION ON SURGERY

SECTION ON EYE, EAR, NOSE AND THROAT

SECTION ON PEDIATRICS

SECTION ON GENECOLOGY AND OBSTETRICS

CHAIRMAN: DR. GEORGE JOHNSON, WILMINGTON

TUESDAY AFTERNOON SESSION
APRIL 16, 1929

The Section on Gynecology and Obstetrics of the Medical Society of the State of North Carolina was called to order in Court Room No. 2 of the County Court House, Greensboro, North Carolina, at 2:25 o'clock by the Chairman, Dr. George Johnson, of Wilmington.

At the beginning, I will say the papers will be limited to twenty minutes and discussion to five minutes. Of course, we would like to have a good discussion on these papers. I will ask Dr. Proctor to take the chair during the first paper.

Dr. Ivan Proctor, of Raleigh, took the chair.

CHAIRMAN PROCTOR: The first paper on the program is "Practical Points in Obstetrics," by Dr. George Johnson, of Wilmington.

CHAIRMAN'S ADDRESS
PRACTICAL POINTS IN OBSTETRICS

By DR. GEORGE JOHNSON, Wilmington

In presenting this paper I am departing from the usual and aim to deal with many, instead of a single obsterical condition. If it can be the means of opening a general discussion on these problems and have other doctors give their opinions and remedies, then my paper will have served its purpose.

It is best to have the patients come to you when pregnancy is first suspected and then have them return at certain definite intervals set by you according to their condition. I make it a point to tell the patients when to come back or when to call me, and to notify me if anything unusual happens. This relieves me of the responsibility of remembering when to see them and the possibility of their being out, or otherwise engaged. Then, too, I am by habit or nature a procrastinator.

The patient should be checked carefully both by history and examination to find any defects as early as possible. She should be encouraged to tell you her complaints and should be told of your desire to help her and for her to come to you for advice instead of going to the neighbor. Superstitions, as birth marks and putting the hands over the head should be dispelled. For the diagnosis I depend on the history and internal examinations. Sometimes two or three of these are necessary at two week intervals before I give an opinion. I have not yet found a test that is satisfactory.

Nausea of pregnancy is the first condition usually requiring attention. I advise them to take plenty of rest and avoid constipation. I do not try to restrict the diet, but encourage them to eat ice, drink soft drinks and to please their palate whenever possible. Usually the first prescription given is potassium bromide drams 3, luminal grains 6, camphor water to make ounces 3, directions teaspoonful every two or three hours as required. If they have a very acid urine I give an alkaline salt. They are told to come back in three or four days if not relieved. Then a preparation of effervescent bromide is given, one tablet dissolved in a small amount of water three or four times daily. If they can take tablets easily, the nausea improved tablet, put up by Parke Davis & Company is used. If the nausea continues, corpus luteum is given intravenously from twice a week to twice a day. In the great majority of cases one of these remedies will suffice to tide them over this period. If they should get progressively worse, then hospitalization is advised. A quiet, dark room selected if possible and no visitors allowed. Glucose is given intravenously, sodium bromide and chloral hydrate is given per rectum. Very seldom do you have to do an abortion for this condition.

After the nausea period they often have a low blood pressure and complain of nervous, weak dizzy attacks. For this ten minims of tincture of nux vomica, before meals, and equal parts of aromatic spirits of ammonia and elixir of bromide compound, directions teaspoonful in water as required. If this does not relieve the condition, two grains of a supra adrenlin three times a day is added. Some multiparas in the first months of pregnancy complains of a severe bearing down sensation. This is usually relieved by a well-fitting pessary, this to be removed in four weeks. Sometimes they have to wear them longer. I had one patient that could not go without it and she wore it until she was in labor. I do not approve of the introduction of any foreign body into the vagina after the 7½ month, on account of the danger of infection. Fortunately in this case there was no ill effect from wearing the pessary.

During gestation constipation is often a vexing problem. They should be encouraged in the formation of a regular habit and given plenty of fruits and vegetables. Cascara, milk of magnesia, phenophthaline or agar and mineral oil may be used, changing from one to the other according to the results. If there is oedema present a saline laxative is preferred.

Pyelitis and cystitis are treated with acid sodium phosphate and urotropin, alternating with an alkali. Caprikol or neutral acriflavine are used when this fails and as a last resort irrigation of the kidney is employed. There often occurs a frequency of micturition which is very annoying, and on examination no cause can be found. Most of these patients are nervous. A mixture of potassium bromide and tincture of hyoscyamus in a lithia preparation usually relieves this. Rest is of the utmost importance and I do not hesitate to use sedative to procure it. In this condition they are as a rule rather uncomfortable from pressure, the baby kicking and the worries incident to pregnancy. If they do not get

rest they feel exhausted the next day and it is not only a hardship on the woman, but in my experience it makes it rather uncomfortable for the husband. I am sorry I have no remedy to offer to make a pregnant woman have a better disposition, as has been requested of me.

I do not give iodine therapy unless specifically indicated, and have discontinued using calcium routinely to protect the teeth. An abundance of fruit and vegetables is better. During the last month of pregnancy I have them bathe the breast with soap and water and apply liquid alboline every night. They are advised to have no tub baths during the last month. Only a sponge or a shower.

In the conduct of labor I am not going to give the most ideal methods or how to conduct a hospital delivery, but will try to give the simplest methods I have found that gives good results in the home. After you have ascertained how hard the pains are, the abdomen is examined to determine the position and size of the baby and the location of the foetal heart. A rectal examination is then made to find out the amount of dilatation and how low the presenting part has descended. In the majority of cases after the examination I have time to make other calls. During my absence I have them boil in pans that I carry for the purpose, one glove, one pair of scissors, one artery clamp, needle holder and thumb forceps. If the labor is prolonged and the patient needs rest I give morphine grains 1/6 or 1/4 with scopolanime grains 1/200. If the patient does not need rest and the pains are ineffective 5 grains of quinine sulphate and a hot enema are given. Pituitrin is not given unless there is a complete dilatation, normal presentation, weak pains and usually only in the multipara. Just before the end of labor the patient is draped, the sterile cotton laid on the bed and the pans placed in a straight chair by the side of the bed. In one I keep the instruments, in the other I pour part of the boiled water to be used in preparing the patient. Lysol is added to the water in both pans. The hands are then scrubbed with tincture of green soap. The vulva hairs are clipped with scissors, a pledget of cotton wet in the lysol solution and the vulva sponged from above downward. After it passes across the rectum it is thrown away and a fresh pledget used. The sides and the middle is sponged off several times. The hands are scrubbed again, the glove put on the hand that corresponds to the side of the bed the patient is on, and from now on nothing is allowed to come in contact with the gloved hand, nor the area that has been prepared. This is far from ideal, but those that deal with ignorant help can appreciate it. If you have gloves on both hands you will get confused which one to get unsterile when necessity demands it. It is surprising how much help one hand is when you have to help administer the anesthetic, hold the legs and brush flies out of the way. If the labor is not progressing satisfactorily, with your ungloved hand pick up a pledget of cotton with the artery forceps, have someone pour 5 per cent mercurochrome on it and paint the vagina. The gloved hand is then used to determine the reason. Forceps are not boiled up until it is found necessary to use them. It is exceedingly

seldom that you have to be in a hurry in their use, and getting them out at this time seems to act as a psychological stimulus to the mother and very often you find that by the time they have boiled and cooled you do not need them. I find that I use forceps earlier and naturally oftener in the hospital than in the home. They are always ready there and, too, you get much better results with repair work in the hospital.

After the baby is born, the cord is tied twice, the second time to diminish the chance of having to come back and retie it. If there is a laceration it is repaired immediately. After the placenta is expressed a large pad of sterile cotton is placed over and in front of the rectum. It is very important in repairing the perineum to begin at the end of the tear of the mucous membrane and sew forward to the vaginal orifice. After this the muscle is taken care of and finally the skin. Simply putting through and through stitches through the skin and muscle will usually give poor results. If there are no lacerations and the mother and baby are in good shape, I wipe up the instruments before the placenta is expressed, thus utilizing the time waiting for the placenta to separate and this naturally avoids trying to get the placenta out in too much haste.

The gown is now changed if necessary, this seldom has to be done if it has been placed well up under the shoulders before delivery, and if proper pads of paper and cloth have been used. The vulva is sponged off with lysol solution and a sterile pledget of cotton placed on it to take care of the slight bleeding. The pad is pulled close to her side and she is rolled over off it. The buttocks are sponged off with lysol solution and dried, the soiled pad removed and a clean one replaced. The vulva pad made out of sterile cotton and gauze is now put in place. The center of the pad that is to come in contact with the vulva is not touched, handling it at all times by the ends. The patient is now rolled on a clean pad. This minimizes the amount of soiled linen and the amount of moving the patient, which at this time is very detrimental to her welfare.

The baby is now oiled and bathed unless premature, in this case it is only oiled. Silver nitrates put in the eye. The cord is taken care of by cutting a small hole in a piece of sterile gauze slipping the stump through it and folding the gauze over. No powders or oil is used. The baby is given boiled water three or four times daily and a teaspoonful of castor oil on the second morning. It is put to the breast three times a day until the milk comes, then every three hours. The mother is given a diet of liquids with crackers and toast the first day and soft easily digested food from then on. If there is too much bleeding, she is told to take a teaspoonful of ergot and to rub the lower part of her abdomen. Quinine sulphate grains 5 is given every day for six days. Aspirin and codein are given as needed for after pains. For the first two days she can take any laxative desired, after then mineral oil and enemas on account of the effect of laxatives on the baby. For engorgement of the breast, the old fashion remedy of hot mutton suet plasters and occasionally pumping the breast. For painful nipples 5 per cent silver nitrate is applied twice a day and equal parts of

bismuth and castor oil applied after nursing. At times a nipple shield has to be used. The patient is kept in bed from eight to twelve days according to how fast the uterus descends. She is encouraged to lie on her stomach, turning over especially just before the pads are changed. This drains the vagina and aids the uterus to return to its normal position. After the tenth day she is placed in knee chest position for ten minutes twice a day. It is best to allow the patient to get up gradually, sitting up in bed for two days, then in the chair for a day, taking a few steps the following day.

The patient is advised to report to the office at the end of the sixth or eighth week for an internal examination. This time she is checked up to see how much damage has been done. If the uterus is posteriorly displaced and if there is a bearing down sensation, a well-fitting pessary is inserted and worn for a month or two and she is taught the kangaroo walk. The cervix should be inspected and if the light in the office is not good, the headlight as used by the nose and throat men is excellent. If the cervix shows an erosion it should be cauterized, preferably with an electric cautery and treated until well. It is a terrible thing to have a patient say that they have not been well since their baby was born, but I hear it and I am sure all of you hear it. It is a great pleasure to hear them say that they feel as well as they ever did, and we should strive to have them come through this trying ordeal with as small amount of damage as possible. The mortality rate is great, but the morbidity rate is greater.

DISCUSSION

Dr. Paul Crumpler, (Clinton): Mr. Chairman and Gentlemen: We have just heard a most interesting paper, especially to the general practitioner. Dr. Johnson has covered well the average pregnancy and labor. I feel gratified to know that my cases have been handled very much as Dr. Johnson advises.

I notice the paper deals largely with pre-natal conditions, which is well, for we have been told that what is done or left undone today will surely rise to bless or plague us tomorrow, and in no condition is this truer than in the practice of obstetrics.

There are a few things, however, not mentioned in Dr. Johnson's paper which I frequently meet in my practice. One of these is leucorrhea which is usually associated with intense itching of the vulva. I have met this quite frequently in my practice, especially in multiparae. I would ask Dr. Johnson to tell us how he treats this condition. My own prescription for this—and I have found it efficient in most cases—is vaginal suppositories containing tannic acid and cocoa butter, with local treatment of the cervix when necessary. I usually use an ointment of phenol, menthol and cocaine for the itching.

Another thing I notice Dr. Johnson failed to mention, which I consider is a very important adjunct to the practice of good obstetrics, is pelvic measurement. This not only gives us considerable information of value

but it also has its psychological influence between the patient and her doctor, in that it causes her to realize we are endeavoring in every way to bring her labor to a successful termination. If we are to expect our patient's cooperation, we ourselves must leave nothing undone that will rise to plague us later. (Applause.)

Dr. George Johnson, (Wilmington), closing discussion: Mr. President, in regard to the leucorrhea, it is a very vexing thing sometimes to deal with. The prescription of the phenol, menthol and cocaine solution I have used.

A prescription I have used for this condition that gives very good results where there is external itching is neosilvol and K-Y jelly, neosilvol a dram to an ounce of K-Y jelly, this to be applied locally. The neosilvol acts as a disinfectant while the K-Y jelly seems to relieve the irritation.

Another thing that works very good in these cases, especially if the cervix is the cause of the trouble, is mercurochrome suppositories or mercurochrome douche. You can make the suppositories up and have them insert one in the vagina every night or have them use half a teaspoonful of five per cent mercurochrome to a pint of water and take a douche once or twice a day. If you will do that, you will find the majority of these cases of itching or pruritis vulvae will clear up. Of course, as you know, most of these cases of pruritis are caused by the secretion from the vagina. The cauterization of the cervix after delivery will tend to cure these up and in most cases the discharge comes from an ulcer on the cervix.

As for the pelvic measurements, I want to say I make pelvic measurements of every woman. The Doctor's remarks are very appropriate and I am sorry I wasn't more definite because that should have been taken up in the general examination. In checking up, of course, you check up for any defects you can find and that includes the pelvic measurements. (Applause.)

PREVENTION OF CONCEPTION: SOME INDICATIONS FOR SURGICAL STERILIZATION

Charles I. Allen, M.D., Wadesboro

Three years ago I read a paper upon this subject before the Seventh District Medical Society, reporting some cases in which the procedures advocated had been applied. An increasing experience has more firmly convinced me of the need and value of therapeutic sterilization in selected cases.

In the few remarks I have to make upon the subject of the prevention of conception, it is not my purpose to enter into any discussion as to the merits or demerits of the so called birth control movement. However, I am glad to state that so far as I have been able to learn, there is no law in North Carolina which prohibits a physician from giving information on birth control to any patient in which he deems it advisable.

What are some of the conditions which are aggravated by pregnancy and parturition and jeopardize the patient's life to such an extent as to make pregnancy and parturition inadvisable? As are most medical problems, it is difficult to state exact and absolute indications, as so many factors have to be taken into consideration and outside of certain general indications the decision must rest upon the physician's experience with, and observation of, each individual case.

During the past six years I have operated upon twenty-two women for the sole purpose of inducing sterility. This does not take into account women who have of necessity been made sterile by operations for pathological conditions, such as, fibroids, salpingitis, etc. Of this number nine have been operated upon because of chronic nephritis, in some of whom there was an associated urinary infection. A woman suffering with chronic nephritis, whose history has shown that she did not do well during pregnancy, who has an associated hypertension, or who has had convulsions during a previous pregnancy, in my opinion, should not become pregnant. I am not speaking now of an acute nephritis discovered during pregnancy. Many of these cases get entirely well and have normal pregnancies afterward, even though they have had eclampsia, previously. I speak of a woman with persistent nephritis and hypertension. These cases usually occur in multipara and her life should not be put in jeopardy for herself and for her children, if she has any. It is the common experience of all of us to have seen a woman with chronic nephritis doing fairly well until pregnancy intervened and then to see her go down steadily regardless of what was done. As an example of an extreme case, I have under my care now a patient who has chronic nephritis and urinary infection. She is 34 years of age and has had seven children, the last two being premature still births, she having had high intermittent fever for several days before miscarrying. Recently she has had one kidney removed on account of stones and pyonephrosis. At the present time she is doing fairly well, but I think it would be fatal for this woman to become pregnant and carry it for any length of time. Something definite should be done for her to avoid this disaster.

Serious heart disease, of whatever nature, especially in a multipara who has done badly in a previous pregnancy, should not become pregnant. I think it exceedingly dangerous for any woman who has, or who has ever had, cardiac decompensation to try and go through pregnancy. Four of my operative cases have been for this cause.

Practically all authorities are agreed that no woman with active pulmonary tuberculosis should become pregnant. And there is grave danger in women with quiescent tuberculosis of making the process active. A summary of statistics by various writers show that, in women with active pulmonary tuberculosis who become pregnant, from sixty-four to ninety-five per cent have an exacerbation of the condition. Von Basdeleban reports that forty-seven per cent of his cases died during pregnancy, labor, or the puerperium. Parry reports that fifty per cent of his cases died

within two months after labor. As an illustration of the bad effect of pregnancy on women with a tuberculosis tendency, Osler quotes Dubois to the effect that, "If a woman threatened with tuberculosis marries, she may bear the first accouchement well, the second with difficulty, and the third never." Another matter one must consider is the effect on the child born of a tuberculous mother. Bacon estimates that, of the ten thousand children under five years of age who die annually in the United States of tuberculosis, 7,500 are born of tuberculous mothers. It may be possible where a patient has means and intelligence to prevent a child born of a tuberculous mother from developing the disease, but in the great majority of cases it is impossible. How many times have we seen a young woman dying of tuberculosis, whose downward history dated from pregnancy? Five of my cases have been for this cause.

There is a large group of mental conditions, including imbecility and epilepsy, in which a woman should not become pregnant, for herself and for the offspring that might result. I have sterilized two of this type.

Two of my cases have been for badly deformed pelves, in which, Caesarean section was necessary and a sterilization operation was done at the same time. I do not believe that any woman whose condition is such that she has to be delivered by Caesarean section, should be required to run the danger of repeated Caesareans, unless she elects to do so. The matter should be fully explained to her and her husband and if she prefers to be sterilized it should be done at the time of doing the Caesarean.

Given a patient regarding whom you have satisfied yourself that, her condition is such, from whatever cause that, she should not become pregnant, what advice are you going to give and what are you going to do?

If there was any certain and satisfactory medicinal or mechanical measures that could be used to prevent conception, it would not be necessary to advocate surgical procedures. From some of the literature that is being distributed one might be led to believe that there are such measures known. But so far as I know, and from reading all of the available literature by those who have given the matter close study, there is no satisfactory and absolutely certain method, other than by operation. There are methods which may be tried, some of them if used with care and intelligence are reasonably effective, but there are many patients and especially those who need the protection the most, who do not have the means or intelligence to carry out these procedures. To tell a patient as is so often done, to be careful and not become pregnant, with no definite instructions, is worthless.

Of the methods other than operative procedures ordinarily in use, investigations have shown that douches, regardless of the medicine used are the most liable of failure to prevent conception. Vaginal suppositories of various kinds show a large per cent of failure to protect. The use of various intra-uterine pessaries that are on the market are not absolutely certain, and their use for any length of time will set up an inflammation which may lead to serious trouble. The use of various contra-ceptive

pastes, which are dispensed in collapsible tubes with long nozzles for inserting into the vagina, have shown a fairly high per cent of protection. Lactic acid, boric acid, and chinosol are usually the spermaticides used, with glycerine or tragacenth as a base. From one to two drams are inserted high up in the vagina against the cervix before coitus. It is the simplest of all methods and can be used by women of little intelligence, but it shows failure in from ten to twenty-five per cent of cases. The two methods showing the highest per cent of protection is the use of condoms in the male and the vaginal occlusive pessary in the female. This pessary makes a diaphram between the cervix and vagina. It must fit properly to be effective and many women have trouble in inserting it. The effectiveness of the condom or pessary is added to by using a contra-ceptive paste in addition, but even this has shown a small per cent of failure. And as I have stated, many patients do not have the facilities, means, or intelligence to carry out these procedures, especially those who need the protection the most, and one failure may be fatal to them.

Pregnancy can be prevented by safe and simple surgical procedures, which relieves the patient of all future worry on this account and permits of sexual relationship without all the irksome paraphenalia above referred to. However, before adopting surgical procedures the matter should be fully explained to the woman and her husband. They should know that it permanently prevents pregnancy, and that if conditions should arise in the future in which the patient should desire to become pregnant, that the chances of reestablishing this function by operative procedures is very slight. There are, however, cases on record where this has been done. In men who have been sterilized by vasectomy and later were operated upon to reestablish fertility from twenty-five to fifty per cent have been successful. They should know that no organs or removed and that the operation has no effect on the menstrual, or sexual life of the patient.

The question naturally arises that, the indications which make pregnancy inadvisable are also in some measures contraindications for operative procedures. This is true to some extent but the operative procedures are very simple and in many cases can be done under local anesthesia. But if an anesthetic has to be given it is far less dangerous, in my opinion, than to do a therapeutic abortion. I consider the operation for therapeutic abortion as serious as most any operation in obstetrical and gynecological work. And the trouble is that after it has been done and the patient has recovered, it may be only a short time until she is pregnant again. In cases of pregnancy where a therapeutic abortion is indicated, and where it is deemed advisable for the patient not to become pregnant again, one should consider the advisability of doing an abdominal therapeutic abortion, in which the uterus is opened, the foetus removed, and a sterilization operation done at the same time. In other words a miniature Caesarean section, combined with a tubal sterilization operation. It frequently can be done under local anesthesia and I do not consider the risk any greater than doing a therapeutic abortion by the usual methods.

There is another method by which a woman may be made sterile, namely, X-ray treatment. There are two serious objections to this method. It is difficult to determine how much treatment is needed to render an individual patient permanently sterile, and she may become fertile again. It also produces an artificial menopause, with cessation of menstruation and ovarian function, which is highly inadvisable.

Having decided upon surgical procedures, one should bear in mind that unless there is an associated pathological condition, which it is deemed advisable to correct at this time, it is not necessary or advisable to do a hysterectomy, oophorectomy, or salpingectomy. The essential thing to do is to remove a segment of each tube, ligate each end, and see that each end is buried beneath the layers of the broad ligament. We should also bear in mind that simple ligation of the tubes, regardless of what ligature material is used, that to cut the tubes, or even to remove a segment and ligate the ends without burying them, have all been followed by pregnancy in a small per cent of cases. To even remove the tubes and leave a stump at the uterine cornu has been followed by pregnancy in a few cases. It is rather embarrassing to have a patient whom you have operated on and have told that she would not become pregnant again, to pay you a visit and find her three months pregnant, or more.

As to the operative technic. If local anesthesia is decided upon the lower abdominal wall is cocainized with a one half per cent novocain solution, and a small Pfannensteil or vertical incision is made just above the symphysis. An incision large enough to admit two fingers is sufficient. As soon as the peritoneum is opened the patient is put in an exaggerated Trendelenburg position. This floats the intestine away so that it is not often necessary to use any intra-abdominal sponges or packs. With two fingers the uterus is brought forward and the tube is grasped with an Allis clamp on each side close to the uterus. Some novocain is then injected into the tube and broad ligament of each side. At this point the patient may be let down from the exaggerated Trendelenburg position, to a more comfortable position, for with a small incision and the uterus pulled up into it there is not often trouble with the intestines coming into the wound. The tube on one side is now grasped with another Allis clamp about one inch distant from the first clamp. While an assistant holds these clamps apart, an incision parallel with the tube is made through the peritoneal covering, and with small scissors or clamp the duct itself is freed from the surrounding tissues. It is then crushed close to each Allis clamp with a hemostate forcep, ligated, and the intervening portion removed. The two cut ends are then buried by whipping the surrounding tissue over them, making a space between the cut ends filled in by the tissues of the broad ligament. The other tube is similarly treated. A small segment of tube including a wedge-shape piece of the uterine cornu may be excised and the wound closed by whipping over with catgut. It is equally effective as the method described, but there is considerable more likelihood of having troublesome bleeding when the uterine cornu is excised. Some rec-

ommend burying the fimbriated end of each tube between the layers of the broad ligament, but I have had no experience with this method. The abdomen is closed in the usual manner, and the patient usually remains in the hospital for ten to fourteen days. I have had no fatality in twenty-two cases. Dickinson reports on 3,000 cases with no fatality, but these were done largely for mental conditions.

Dickinson reports some cases made sterile by the use of a special electric cautery. The cautery is inserted through the cervix into the uterine angle on either side and the current is turned on for ten to thirty seconds. After allowing for a period of healing and scar formation from the cautery burn, the efficacy of the treatment in closing the orifices of the tubes at their entrance to the uterine cavity can be determined by uterine insufflation. Chemical caustics have also been used for this purpose. It is a very simple and promising procedure, but I have had no experience with it.

Operation in the male to produce sterility is much more simple. I have operated on four men, who, on account of their wives' conditions, after the matter had been explained to them, preferred to have the operation done on themselves. Under local anesthesia a small segment of the vas is removed on each side, the upper end to be crushed and ligated and the lower end left open. With the vas held just under the skin of the scrotum by an assistant, the operation can be performed with a half inch incision on each side, the entire work requiring but a few minutes. A suspensory bandage is worn for a few days, ordinarily it is not necessary for the patient to remain in the hospital. In my patients it has had no appreciable effect on their sexual life. Many cases have been reported in which it increased sexual desire. If conditions should arise in which the patient should desire to have fertility reestablished, there is a fair chance of doing this by implanting the cut end of the vas into the epididymis. The secretion from the testicles is absorbed by the tissues of the scrotum, and there is no appreciable effect on the amount of semen ejaculated, for as we know, the amount of secretion from the testicles which carries the spermatozoa is very minute, and the larger amount comes from the prostate and seminal vesicles.

There is one other class of patients in which it is my practice to do a sterilization operation, but I know that many will disagree with me. I refer to cases of marked prolapse of the uterus in women who have not passed the menopause, especially prolapse of the third degree. Most of these patients have several children and if the matter is explained to them they prefer to be sterilized during the operation, but if they prefer not to have it done, I advise the use of pessaries until they have as many children as they want, or pass the menopause, and then do a sterilization operation at the time the prolapse is corrected. I do not believe that we can do the surgery necessary for a permanent cure of these cases and have the patient go through another pregnancy and delivery without a great deal of the work being undone. I feel that we are not doing justice to the patient to subject her to an operation of this magnitude and leave her in a condition in which the entire work may have to be done over.

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DISCUSSION

Dr. C. S. Lawrence, (Winston-Salem): The Doctor has gone into this study very thoroughly. As we have a law in the state now to sterilize the mentally incompetent, I think this subject will receive more detailed study. I have nothing to say in regard to the technic of Dr. Allen's paper, other than to say that I have tried one or two methods of sterilization in women. I have reached the conclusion that the best method in my practice (I do not know about his method; maybe his method is as good in his practice as mine is in my practice) is the resection of the tube at the cornu, taking out a small wedge-shaped piece of tissue at the cornu, closing that well with interrupted sutures and transplanting the distal end of the tube in the posterior wall of the uterus, bringing the two ends of the tubes together on the posterior wall. I have tried that several times and find it very efficient.

As the Doctor says, ligation of the tubes does no good. That is my opinion. I had a case once in which I ligated a tube and told the husband and wife they could go on their way rejoicing, that they would have no more children. They have had about ten children. She was still a young woman. About four months later she came back two months pregnant, so I forever afterward stopped ligating the tube.

Dr. Charles I. Allen, (Wadesboro), closing discussion: Mr. Chairman, answering the question about hydrocele occurring after sterilization operations in the male, it has not occurred in any of my cases and I have seen no mention of it in any of the literature. I know that hydrocele occasionally occurs as a sequelae of varicocele operations, this being due to a disturbance of the circulation of the cord and testicle. In the sterilization operation described it is not necessary to ligate any vessels.

I appreciate the discussion by Dr. Lawrence, especially to have him emphasize by relating a personal experience the futility of trying to induce sterility by simple ligation of the tubes.

LAPAROTRACHELOTOMY OR THE LOW CERVICAL CAESAREAN SECTION

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The low cervical Caesarean Section had gained considerable popularity in Europe prior to the World War, while in the United States it was still classed among the obsolete obstetrical procedures. It had remained practically untried since Sanger introduced the classical operation in 1877.

During the past five years, due to the excellent results reported from the foreign clinics and to the favorable results reported in this country by such men as Hirst, Polak, Beck, DeLee, and a few others, this operation has gained its just place among the accepted obstetrical procedures. Today, laparotrachelotomy is fast replacing the classical operation in most of the large centers and I believe that within a few years the classical operation will occupy the same place as did the low cervical in the last decade. Laparotrachelotomy is purely an obstetrical operation and should be performed by those physicians especially qualified in this branch of surgery. This brings us to the fact that there are entirely too few obstetrical surgeons among our number, especially is this true of the small centers. I believe one of the outstanding needs of today is for physicians competently trained in operative obstetrics.

The methods by which a child may be delivered through the abdominal wall are still passing through a period of evolution and development. Many ingenuous and different plans have been and still are being attempted. Some are found to be so lacking in merit that they soon very properly pass on into discard. Some show many desirable advantages and yet are attended with serious disadvantages. It is altogether probable that the best method of performing Caesarean section has not yet been attained. We hear much about the abuse of Caesarean section. That too many sections are performed is known to all. A great many of these are performed because it is the easiest way out of a difficult situation; however, the easiest way is not always the best. An abuse which probably occurs with greater frequency, but of which we hear less, both in hospitals and in patients under the care of private practitoners is the failure to recognize early in a given case that delivery through the pelvis will be fraught with great danger to mother and child or else impossible of accomplishment. As an example of this type case, consider the patient having had a long hard labor and numerous attempts at delivery and examinations but with a viable foetus in fair to good condition. It is this type of case that gives the high maternal and foetal death rate and it is in this type of case that laparotrachelotomy is especially indicated.

That more women die each year in the United States from Caesarean section is proven by a glance at the reports of the Bureau of Vital Statistics. In 1920 there were 212 deaths from Caesarean section; in 1927 there were 367 deaths from Caesarean section—an increase of 155 deaths from this operation in the seven-year period. That peritonitis is the most frequent cause of death following Caesarean section is known to all; therefore, any procedure which will tend to lessen this complication is surely worth while.

The history of the low cervical operation is extremely interesting, but time permits its discussion here. Osiander, in 1805, thought out, performed and recommended the low cervical operation almost as it is performed today. Joerg came on the same idea in 1806, one year later. The operation was popular for a while but soon fell into disrepute, espe-

cially after Sanger introduced the classical operation in 1877. The classical operation was in vogue for a number of years but it also left much to be desired so attention was again directed to the cervical approach to the uterus. Frank of Bohn in 1906 recalled attention to the old operation of Joerg. Sellheim clarified the surgical anatomy of the parts and demonstrated the advantage of delivering the child through the dilatable portion of the uterus rather than the contractile portion. This work is fundamenal to all later modifications of the low cervical operation. Latzko advised the extraperitoneal approach to the uterus by making an incision along Poupart's ligament and pushing the bladder and its peritoneal attachment over on the anterior surface of the uterus, thus gaining access to the lower uterine segment without opening the peritoneal cavity. With this procedure I have had no experience; however, a great number of bladder injuries have been reported following the operation. Since Latzko introduced his modification about twenty operations have been devised. I refer you to DeLee's article, "An Illustrated History of the Low Cervical Caesarean Section," Am. Jr. Obs. Gyn, 1925, X, No. V. In the United States, DeLee has probably done more to effect the general acceptance of the low cervical operation than any other personage.

About 20,000 women die each year in the United States from childbirth. Most of these deaths are the result of infection following instrumentation. Some practitioners do not seem able to grasp the idea that there is considerably more shock and trauma trying to deliver a patient by some hard obstetrical operation, through soft parts which are not prepared, than there is to an abdominal delivery, especially the low cervical operation. Post-operative complications are much less likely to occur after an abdominal delivery than after a delivery characterized by the forceful dilatation of the soft parts and the forceful delivery of the child. I am not an advocate of Caesarean section as the easiest way out of a difficult situation,—far from it. When possible and when there is not extreme danger to the mother and child, I believe all cases should be delivered from below. I believe consultation should always be obtained before Caesarean is decided upon. When confronted with the question of an abdominal delivery, a sentence which I once heard Dr. DeLee quote always comes back to me, "Any man can do a Caesarean but it takes an artist to deliver from below."

Let us turn our attention for a few minutes to the reports of various authors and clinics who are performing the low cervical operation. Stein and Leventhal of Chicago report 40 cases without a death. Danforth of Evansville reports 50 cases without a death. Cameron of London reports 83 cases with a mortality of 3.6 per cent. Hofmeier, Franz and Buish report 194 cases, 50 per cent of which were infected, with a mortality of 1.5 per cent. Marassy reports 1200 cases with a mortality of 3 per cent. DeLee in a recent personal communication advises that at the Chicago Lying-In Hospital, he and his associates have performed 810

operations with 9 deaths. "One death resulted from an ether pneumonia, one from a transfusion for infection from which she might have recovered. There were four deaths from peritonitis; one died from pulmonary embolus after she was discharged from the hospital; one died from gangrenous appendicitis, which even the surgeons did not recognize." This gives an uncorrected mortality of 1.1 per cent, which is exceedingly low. However, all these cases were delivered in what is probably the best organized lying-in hospital in the world. In the general hospital, these figures will be exceedingly hard to approach, though they should be our goal. The cases included in these reports of various authors are not selected cases. They include the infected as well as the clean cases. We have most extensive statistics on the classical operation, comprising many thousand operations with a mortality rate of from 8 to 10 per cent. This includes all cases clean and potentially infected. For the clean cases or those in which it was known that Caesarean would be the method of delivery, we have a mortality rate which oscillates around 3 per cent. No statistics are available for the two classes of cases for the low cervical operation. When we stop and consider the fact that the mortality rate for the low cervical operation in all cases is as low as the mortality rate in the clean cases where the classical operation is used we do not wonder at the widespread and gaining popularity of the low cervical operation.

The advantages of the laparotrachelotomy are numerous. Let us consider first the advantages of the classical operation. These are only two; namely, the classical operation can be done much quicker and it requires less operative skill. Time permits a full discussion of the advantages of laparotrachelotomy but only a few of the more important ones will be briefly mentioned.

(1) The uterine incision is made through a less vascular area of the uterus, thus the oozing from the intermuscular vessels and bleeding from the uterine sinuses is reduced to a minimum.

(2) The uterine wound lies in a quiet part of the uterus and is at rest during the process of suturing. There is less tendency for the edges to be drawn apart and gaps to be formed between sutures. Picture, if you can, an actively contracting and relaxing uterus making excursions all over the abdomen and picture a wound with wide gaps which will allow the seepage of the lochia.

(3) The edges of the wound are thin and suture is therefore easier and quicker.

(4) The situation of the wound is such that adhesions to the intestines omentum or abdominal wall cannot occur. The only suture line exposed is one of plain catgut. Various authors give the incidence of adhesions following laparotrachelotomy at from 25 to 40 per cent. Following the classical operation, the incidence is from 80 to 100 per cent.

(5) The wound is covered by a thick layer of fascia and by the bladder, thereby permitting a more perfect closure of the peritoneum. For

this reason there is less likelihood of infection as it has been shown that a great number of the cases become infected through a leaky abdominal wound.

(6) The lower uterine segment is more resistant to infection than is the fundus.

(7) Should infection occur, it is well walled off. The peritoneal cavity is protected by three lines of defense; first, the pubo-cervical fascia; second, the bladder and its peritoneal reflection; third, the uterine peritoneum which overlaps the bladder reflection. Should drainage become necessary, it is easily accomplished by anterior colpotomy or by opening the abdominal incision for a short distance at its lower angle.

(8) There is less disturbance of the abdominal viscera. The intestines are rarely seen. Thus there is considerably less shock to the operation.

(9) The scar is in a much safer area for subsequent pregnancies and labor. The lower uterine segment stretches late in labor. This stretching to which the scar is subjected is purely passive. There is no active drag on each side of the scar as occurs in the contractile portion of the uterus. Only 12 cases of rupture of the uterus following the low cervical operation are on record in the world's literature. Should the old saying "once a Caesarean, always a Caesarean" hold? I do not think so unless the same indications are present or unless there is a definite history of infection following the first operation.

(10) As regards the performance of the operation, it is just as easy to the practiced obstetrical surgeon or general surgeon as is the classical operation. True, there is considerably more operating. It is not done by the so-called two strokes of the knife, but this should not deter the man who considers himself capable of perfecting an abdominal delivery.

(11) We are able to allow all patients a trial labor before performing the section. This is important, for many of those border-line cases on whom section is performed will deliver spontaneously. Laparotrachelotomy is performed best after the patient has been in labor, due to the fact that the lower uterine segment lengthens and is pulled more out of the pelvis, thus affording better exposure. Also, the incision lies lower in the lower uterine segment.

(12) In this operation we have a decidedly lower mortality and morbidity rate.

(13) We are able to extend the indication for abdominal delivery to the cases of neglected labor where infection is suspected.

(14) The convalescence is much smoother. There is a noteworthy absence of the usual post-operative sequella; namely, shock, hemorrhage, ileus, nausea, vomiting and sepsis. There is usually a feeling of well being during the entire puerperium. I have operated on only one woman who has had both laparotrachelotomy and the classical operation. She was high in her praise of the low operation.

(15) Rupture of the membranes, previous bag induction, ante-partum and intrapartum infection do not contraindicate this type of abdominal delivery. These advantages, I am sure, will convince the most dubious one that the low cervical operation is the one of choice in the great majority of cases requiring abdominal delivery.

All methods of performing the low cervical Caesarean section depend on certain anatomical changes occurring in the lower uterine segment, the overlying peritoneum and the bladder during pregnancy. The technique used is that devised by DeLee, to which he has given the name laparo-trachelotomy. It is based on Sellheim's third method to which he has added several features. The patient is prepared as for any other laporotomy. The abdomen is shaved and scrubbed with alcohol, ether and green soap, after which it is painted with 2 per cent mercurochrome and a sterile dressing applied. The preparation of the lower abdomen must be carried to the upper end of the vulvar crease. The patient must be catheterized before the operation and the catheter clamped and left in place. No morphia is given pre-operatively. The usual preparation of the abdomen is carried out in the operating room before the patient is draped. The abdomen is opened in the midline. The incision should extend from the upper margin of the symphysis pubis upward from 12 to 14 centimeters. After the abdomen is opened, the edge of the parietal peritoneum is sutured to the edge of the subcutaneous fascia at four points; namely, the upper and lower angles and in the middle of the incision on both sides. The lower segment will now be exposed. The upper limit is marked by a slight folding of the peritoneum, which gives the appearance of a transverse seam and which DeLee has named the "gray seam." This marks the point of the contraction ring and its location in reference to the exposing wound depends on the length of the lower uterine segment. The longer the parturient has been in labor and the more dilatation has progressed, the greater is the length of the lower uterine segment. Above the gray seam is the upper or contractile portion. The body of the uterus appears, reddish in color, and with the visceral peritoneum so firmly attached that no amount of endeavor can strip it off. There is no fascial layer. Below the gray seam is the lower zone or the so-called lower uterine segment. The peritoneum is loosely attached and may be picked up in folds. The fascia is well developed and, as it covers the uterine muscle, it gives a grayish white appearance to the lower zone. The peritoneum from the gray seam is reflected over the bladder at the utero-vesical fold. The distance between the points is from 6 to 10 centimeters. The intestines are rarely seen and rarely is it necessary to use a gauze pack in the abdominal cavity. The peritoneum over the lower uterine segment is now incised transversely 3 to 4 centimeters below the gray seam. This transverse incision is carried laterally on each side about 6 centimeters. Care must be taken that the incision is not deep enough to encounter the fascial layer, as the line of cleavage is above this layer in the subperitoneal tissue. If the fascial layer is disturbed, bleeding will be

profuse and technical difficulties will be created. The two flaps are now made. The lower flap is dissected downward by the point of the finger and, with the flap of the bladder, is dissected loose from its uterine attachment. The upper flap is made in the same manner, except that great care must be exercised as the flap becomes very adherent at the gray seam and is easily buttonholed. The lower segment is now exposed and the uterus is ready for incision. Two Allis forceps are applied to the upper and lower limits of the contemplated incision. The lower forceps are well down behind the symphysis. The upper are about one centimeter below the line of the gray seam. The length of the uterine incision is from 10 to 12 centimeters. One c.c. of ergot is given intramuscularly just prior to making uterine incision. The uterus is punctured at the top of the contemplated incision. If the bag of waters is still intact, it is ruptured and the spill cared for by a suction pump. After the uterus has been drained, it is incised by cutting with a pair of bandage scissors. Should bleeding from the edges of the wound become troublesome, which is rare, an assistant grasps the edges of the wound with Allis forceps placed about two centimeters apart. These are removed before the child is delivered. The delivery of the child follows. The face is sought with the hand and the finger is inserted into the baby's mouth. The face is then rotated into the wound, so that it is the presenting part. The assistant then replaces the operator's finger with his own and steadies the head while the operator applies a pair of obstetrical forceps. DeLee has modified a pair of Simpson forceps by exaggerating the cephalic curve so that a better grasp on the head can be secured. The head is then delivered, chin first. When local anesthesia is being used, the occiput may be rotated into the wound in the case of occiput anterior positions. The forceps are then applied in the same manner as when used to deliver the head from below. Pituitrin is given as soon as the child has been delivered. While the assistant is clamping the cord, the surgeon grasps the edges of the uterine wound with Allis forceps, peeling the membranes back from the edge of the wound as each forcep is placed. This prevents bleeding from the sinuses in the wound. The placenta, if not expelled spontaneously within five minutes, may be removed manually. If bleeding from the placental site is profuse this is picked up and whipped over with plain catgut. The uterus is sponged out several times and if there is much oozing it is packed with about four yards of gauze. The free end of the gauze is sutured to a metal shuttle which is pushed through the cervix into the vagina, carrying the gauze with it. This is removed in from 6 to 24 hours. The uterus is now ready for closure. Number two chromic gut is used to make an interrupted suture down to, but not through, the mucosa. As the suture is placed the Allis clamps are removed. The wound should be kept free from blood during the suturing. A second layer of sutures of the same material are then placed in the muscle. A third layer of number two chromic gut, interrupted, approximates the fascia. This fascial suture is the most important step and is stressed by DeLee, as it

unites that important structure, the fascia, which makes the lower segment almost rupture proof. After the uterus is closed, particular attention is given to the denuded area over which the peritoneal flaps are to be sutured. Hemostasis must be complete, as any bleeding here will lead to the formation of hematoma under the bladder with subsequent infection and suppuration. The lower flap is now sutured to the upper with plain gut. The parts are now restored to their original anatomic relation. The abdomen is closed in layers as after any laparotomy.

To date I have delivered five women by laparotrachelotomy. My results have been such that I am more than pleased. In each case I am able to report a living baby and living mother discharged from the hospital on from the tenth to the fourteenth day. Had any of these cases been delivered by the classic operation, I believe they would have died as they were all potentially infected cases. All had had vaginal examinations outside the hospital. While this is an extremely small series of cases from which to draw conclusions, one cannot help but become enthusiastic about the operation when the end results are so good. I am sure that when laparotrachelotomy is as widely used as the classical operation, as it undoubtedly will be, there will be a great reduction in the death rate from Caesarean section.

In conclusion I would like to present one case history to illustrate the value of the operation in the infected cases. Mrs. B., age 14, para 1. Admitted to Memorial General Hospital Oct. 2, 1928, in coma. She started in labor about 3:00 A. M. Had convulsion at 4:00 A. M., followed by coma from which she had not recovered. Number of convulsions not ascertainable. Physical examination revealed a parturient woman at term, oedema of feet, ankles and eyelids marked. The systolic blood pressure was 190 mm. of mercury and the diastolic 120 mm. of mercury. In coma. Catheterized specimen of urine boiled solid with albumin and showed numbers of hyaline and granular casts. The patient was having very slight uterine contractions about every 15 minutes. Rectal examinations revealed a soft cervix with about a 4 centimeter dilatation. The foetal heart tones were 160 and somewhat thready. We obtained the history that she had been examined vaginally repeatedly by at least two physicians. No gloves were used in making these examinations. One physician had given the patient ten grains each of calomel, rhubarb and colicinth before the onset of the coma. The patient was treated actively for her eclampsia along conservative lines. In spite of this the coma seemed to deepen and in eight hours after admission we decided to deliver the patient. Laparotrachelotomy was the procedure decided upon in view of her age, parity and condition of the soft parts. The operation was performed under ethylene anesthesia and a living child extracted. She was returned to her bed in fair condition. The temperature on the second post-operative day went to 104 degrees, probably due to a lochiostasis as it was never above 100 degrees on any other day. Her mind was clear on the third day and there

were no post partum convulsions. She was discharged on the eleventh post-operative day. Mother and baby were seen two months later and both were enjoying excellent health.

DISCUSSION

Dr. Ivan Proctor, (Raleigh): I listened with a great deal of pleasure to the Doctor's paper on low cervical Caesarean section. We have been doing this operation for several years and in our opinion anyone who does a classical operation on a patient who has been examined with a non-sterile glove, on a patient who has been in labor six hours or more, or whose membranes have been ruptured for an equal length of time, or in any patient who is potentially infected, performs a treatment that does not measure up to the best and fails to render the service to which the patient is entitled. The low cervical Caesarean section has reduced the mortality of Caesarean section to one-half or less.

Polak in a report of 2,200 Caesarean sections by many operators throughout the country, gave a three per cent mortality in patients who were not in labor; six per cent in patients who were in labor, and fourteen per cent in patients who had ruptured membranes. Gordon and a committee investigating Caesarean section in Brooklyn hospitals, reported 1,200 classical Caesarean sections with a mortality of six per cent and approximately 200 low cervical Caesarean sections with a mortality slightly above four per cent. Fifty-three per cent of the classical operations were done on patients who were not in labor, who had been in labor less than six hours without ruptured membranes and, therefore, in the best of surgical condition, while sixty-six per cent of the low cervical operations were done in patients who had been in labor for more than six hours, frequently with ruptured membranes and in poor surgical condition.

Therefore, if we can obtain better results, a considerably lower mortality rate with the low cervical operation with patients who have been in labor for a long while and are not good surgical risks than we can obtain with the classical operation in patients not in labor and good surgical risks, why shouldn't we choose the low cervical Caesarean?

On last Friday we did a low cervical Caesarean on a patient who had been brought in forty miles from the country, and who had been in labor three days. She was thirty-five years old, a primipara, blood pressure 215, contracted pelvis, two centimeters below normal. We were unable to force the foetal head into the pelvis and chose Caesarean section as the proper treatment. We did a two-flap, low cervical Caesarean and both the patient and baby are doing nicely today.

About three weeks ago we had another patient brought in from the country who had been in labor four days, with ruptured membranes for two days, a justo minor pelvis, a girl, a primipara, eighteen years of age. A two-flap low cervical Caesarean was done. The patient and her baby were discharged in good condition two weeks later.

As to technic, I would like to mention particularly opening the peritoneum over the low uterine segment. If a knife is used in opening this peritoneum, we frequently cut through the fascia that the essayist has mentioned and get below the avascular area which lies just subperitoneally. That is very important. If we get into the avascular area stripping the peritoneum and the bladder is very easy and simple. If we cut through the fascia, we get into a bleeding area and it makes our operation complicated.

As to the induction of labor, we think that all intravaginal and intrauterine manipulation should be eliminated in any case in which there is a possibility that Caesarean section would be used in order to accomplish delivery.

As to anesthesia, we prefer to use novocain. We open down to the uterus with novocain, have everything prepared ready to open the uterus and then use gas at that time for opening the uterus and extracting the baby.

The four advantages of the low cervical Caesarean section are (the Doctor has been over those, but I will review them): (1) that the incision is made through the thinned out lower uterine segment which is much less vascular than the body of the uterus. This lessened vascularity gives us a minimum amount of bleeding. (2) The same lower uterine segment contracts comparatively little when we think of it in connection with the body of the uterus. This lessened contractility insures good healing and protects us against subsequent rupture in a pregnancy or labor to follow. (3) The combination of the two, lessened vascularity and lessened contractility, protects us against embolus formation. (4) The incision through the uterus is covered over by two layers of peritoneum which seal themselves within a few hours after labor, making the wound from that time on extraperitoneal, so that if infection takes place, it drains through the cervix and vagina and protects the all-important peritoneal cavity.

With all these facts in view, I am bound to choose the low cervical Caesarean section in preference to the classical operation. (Applause.)

THE USE OF LIPIODAL IN ROENTGEN-RAY STUDY OF UTERUS AND TUBES

By Robert A. Ross, Durham

This section has been most fortunate in having had splendid papers presented, in the past, on various phases of pelvic diagnosis and especially on sterility. Dr. Ferguson has made a splendid contribution in simplifying and facilitating the insufflation test for tubal patency. The substance of this paper will embrace some experiences with X-ray study of the uterus and fallopian tubes injected with lipiodol.

Forestier[1] states that Portiet, of France, in 1923, was first to inject iodized oil into the uterus for study. Though there is evidence to show that

Heuser of Argentina used this substance in 1922. Ferre[2] was one of the first to report the work. E. C. Sternheuter and Samuel Brown[3] quote the earlier works, make a preliminary report and give their technique. Heuser[3] reports fibroid studies, later describes worm-like movements of the tubes, and still later says that the reactions sometime seen following injection are due to overheating the oil for liquifying purposes. Greene and Pendergrass[4], find some suggestive therapeutic value attached to the procedure. Had four patients with chronic salpingitis who improved following injection. They felt better, gained weight and the leucorrhea decreased. Jarcho[5] thinks the procedure is safe. He has found evidence of improvement and ascribes it to the probable liberation of iodine from the oil. He has not had any evidence of iodism. P. Mocquot[6] is an earlier investigator and reports a case whose diagnosis was cleared up by injection. Coventry[7] lays stress on the value in diagnosing congenital deformities, and in the sometime perplexing question as to what was done at a previous operation. C. Beclere[8] describes a different technique and says that pressure of 40 cm. may force the oil into the veins. Miller and Martinez[9] used it in 15 patients for early diagnosis of pregnancy. None had symptoms of threatened abortion yet three of them aborted fairly promptly. These investigators advise against the use in diagnosing pregnancy. Haselhorst[10] reports two cases of severe inflammation with fever following hysterography. Odenthal contributes two more, and advises that patient stay in bed as long as possible. He uses method only in uncomplicated sterility. Rubin and Bendick[11] have given splendid essays on this subject. They discuss fully the peristalsis of the tubes, quoting work done by other men who used experimental animals. They also give observations on the findings in patients who are being operated on. As a result of their painstaking efforts we have a clearer knowledge of the anatomy of the uterus and tubes.

Our technique is similar to that described by J. C. Hirst in the Amer. J. of Obs. and Gyn., or may vary slightly. There is little preliminary preparation necessary. The patient is placed on the X-ray table and draped as for examination. Bi-valve speculum, with light, inserted. Cervix painted with mercurochrome and grasped with forceps. It is wise to have a tenaculum forcep equipped with an attachment for fastening to the syringe or cannula. The sound is passed to locate the external os. Six to ten c.c. of lipiodol, warm, is poured into the syringe (which is also warm), and air expelled. The cannula is metal and about six or eight inches long. It is screwed to the record syringe. It has a petcock at one end, a special olive-tipped guard above the cervical end to prevent a backflow from the cervix when the oil is injected. The cervical end is shaped like a sound. The cannula is passed into the cervix and the patient allowed to straighten her thighs so as to not interfere with the fluoroscope and plates. Injection is begun and its progress is closely checked. Sometimes there is a spasm of the uterus so you may have to hesitate a moment when about three c.c. have gone in. Then proceed again. If the cannula is

properly placed and there is no obstruction there is no need for pressure over 100 to 150 mm. While the filling process is going on one may note any filling defects in the uterus and tubes. When the oil reaches the ampulla it can be stopped. A plate is now made, the cannula removed and later a second plate made. Most writers advise making a picture the next day also. From the work of others and from our own experience there are certain things that we would like to emphasize. You can use this method in conjunction with the ordinary insufflation test gaining the added information as to the location of the occlusion and possibility of relief. The aid in intra-uterine and intra-mural conditions is definite. The differential diagnosis of pelvic masses is aided. And the tubal pathology diagnosis is somewhat simplified. Though bi-manual examination must be closely followed for after all what we see is an opaque material in a hollow viscus, and not the lesion itself. The fluoroscope should always be used for many reasons. Chief of which is the correct gauging of the amount of injection and the rapid detection of such conditions as early pregnancy et cetera. If the patient is X-rayed the following day one should not be confused by particles of oil in the peritoneal cavity or in the vagina. We have used this method successfully and have had no unpleasant sequelae. One patient of Drs. Perry and Hunter Sweaney later became pregnant and was successfully delivered. And the patient, whose roentgenogram we show in the early months of pregnancy, has since been delivered.

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DISCUSSION

Dr. D. R. Perry, (Durham): This work, some thirty cases, we have done in Durham and we have all been very pleased with it. To the general practitioners and surgeons and gynecologists the only thing I would like to lay stress on is the caution with which we go about it. The technic, of course, he described, and I think the technic should be as he described it, using the fluoroscope and watching the progress of the oil as it proceeds through the womb and out into the tubes.

I noticed in two or three cases the patient experienced pain and being a roentgenologist and watching the patient and the oil, (because the person who does the injection is pretty well tied up, usually you need about four different hands and a doctor has but two, so he has to have an assistant.) I have found it is always a good idea to stop when she complains of pain and give her a few minutes, certainly a few seconds to let them relax, because the pain is pretty excruciating.

The thing we always question when the patient comes in is this: "Is this an acute condition this patient has?" If yes we at once say, "No, let's wait until this thing quiets down." This examination should not be done promiscuously, taking patients as they come. As the Doctor says, if there is immobility or fixation of the womb, we hesitate to do it. If it is chronic sterility and no symptoms particularly except that or if it is something that has been active and subsided, then we feel this examination would give a lot of information that will be beneficial to the family doctor or surgeon or gynecologist or whoever it is that is going to treat the patient.

The cases we have done have certainly added a lot of information to this subject for the men studying, in conjunction with the physical examination, including the manual examination along with these studies.

Dr. W. Houston Moore, (Wilmington): In February I saw Dr. Musser, the obstetrician. One thing he did that I did not hear Dr. Ross speak of was that he first injected carbon dioxide into the uterus. He had that connected up with a manometer and he would put in a pressure up to 200 millimeters of mercury. He claims that lessens the pain; it opens the way for the lipiodol to go up into the tubes. The method he used was to prepare the patient as for any other ordinary vaginal operation. This was done in the operating room. They had one of the portable X-rays right in the room. He did not use the fluoroscope. I asked him if any gas got in the abdominal cavity what the result would be. He said it didn't cause irritation. They had found lipiodol as late as two years after the injection. They tried to select cases. There was no evidence of infection or no history of recent infection. He said that would certainly be a contraindication.

Dr. R. A. Ross, (Durham), closing discussion: Mr. Chairman, recently there has been quite a bit of work done on lipiodol in connection with pneumoperitoneum. The added benefits derived from pneumoperitoneum is that if there are adhesions in the pelvis or any abdominal viscera, they will show up on the X-ray plate. You have then the lipiodol which throws a shadow, of course, and the adhesions which are much denser than the ordinary carbon dioxide or oxygen, whatever is injected into the uterus. I might say, Dr. Moore, for my patients I usually use the insufflation test before the oil, but I have not used it for the same reason as the doctors at the Mayo clinic. I appreciate that suggestion.

PROCIDENTIA UTERI

C. S. Lawrence, M.D., F.A.C.S.
Winston-Salem, N. C.

Since women began to bear children they have suffered more or less from disorders of the genital organs. Thousands of years had elapsed before a definite plan of relief, based upon scientific knowledge, was offered them. Not until Ephraim McDowell, of Danville, Ky., performed his first ovariotomy, on Mrs. Crawford in 1809, was there a bold attempt made to relieve this miserable condition. Then followed J. Marion Sims of South Carolina (practicing in Alabama) who published his results of successful treatment of vesico-vaginal fistulae in 1852. I cannot pass without mentioning the names of a few noted Southern surgeons who blazed the trail in the treatment of gynecological conditions which led up to the high efficiency which now obtains.

Thomas Addis Emmet, of Virginia a pupil of Sims, who was noted for his classic plastic work on the vagina.

Nathan Bozeman, of Alabama, who paid especial attention to pyelitis and cystitis and catheterized the ureters through vesico-vaginal fistulae in the treatment of pyelitis.

Prevost, of Louisiana, and William Gibson, of Maryland, pioneers in Caesarean section.

Josiah Clark Nott, of South Carolina, who described coccyodynia.

Theodore Gillard Thomas, of Edisto Island, S. C., who did the first vaginal ovariotomy and gastroelytrotomy.

Robert Battey, Augusta, Ga., who first advocated the removal of ovaries and uterine appendages in neurotic women.

Dr. Howard A. Kelly, of Baltimore, Md., the first to drop the stump of the cervix back into the pelvis after abdominal hysterectomy.

Dr. J. W. Bovee, of Washington, D. C., the first to anastomose the ureters and shorten the uterosacral ligaments.

In 1898 Dr. Thomas J. Watkins, of Chicago, devised his operation known as the interposition operation. This was one of the greatest steps in gynecology in the 19th century.

As a result of the outstanding work of these and many other noted gynecological surgeons several classifications of procidentia uteri (or descensus) have been published, none of which have been universally adopted.

I find in looking over the literature that practically every gynecologist has his own classification. It would be well, it seems to the writer, for some definite classification to be adopted. I find that one well known gynecologist reserves the term "procidentia uteri" for the final and last degree of prolapsus, that is in which the uterus hangs entirely out of the

body, pulling with it the bladder and rectocele. While another equally as good a gynecologist reserves the term prolapsus for this condition. In order to systematize our records we have adopted the following classification, viz:

1. Retroversion of the uterus. In this condition the fundus in the cul-de-sac with other pelvic structures normal.

2. Retroversion uteri with a partial descensus. Here the cervix reaches about mid vagina and is freely movable, the vaginal outlet being relaxed.

3. When the cervix uteri reaches the introitus vaginae. Relaxed vaginal outlet and cystocele.

4. Complete procidentia. The body of the uterus with the cervix hanging outside the vagina. Cystocele and rectocele.

Treatment: The successful treatment of descensus uteri, makes no difference what stage, depends entirely upon the surgeon's knowledge of anatomy of the parts and the proper use of them in repair. I refer to the excellent paper of Dr. R. T. Frank on Anatomy of Descensus Uteri, Surg. Gyn. & Obs. 1917, and F. A. Maguire, Sydney, Australia, March 1924.

Briefly, the pelvic cavity is divided into a two-story affair. The upper story is represented by the broad ligaments, cardinal ligaments and uterosacral ligaments; the lower story being composed of the triangular ligament or pelvic plate of fascia, levator ani muscle and its fascial coverings. An organ from the pelvic or abdominal cavity passing through these structures constitute a hernia and if we keep in mind the treatment of hernia of any part of the anatomy we will be more successful in treating descensus uteri. The treatment that we follow is based upon our classification.

First: With retroversion the vagina and perineum being in good condition we simply do a shortening of the round ligaments, usually after the method of Webster-Baldy. That is the round ligaments are brought behind the fundus of the uterus through an opening under the fallopian tubes and stitched in place with fine linen thread. If the cul-de-sac is extra deep and uterosacral ligaments elongated we shorten these ligaments, after the method of Bovee. This operation has proven satisfactory in our hands.

If the uterus is retroverted and cervix in mid vagina and freely movable we often do the same operation and also repair the perineal floor, if there is a cystocele present we repair that at the same time but as a rule we do not find cystocele in type two descensus.

Type three the Watkins operation is most usually performed. The Watkins operation has been published so many times and made so clear in the literature that I shall not go into it in detail here other than to mention it in the illustrations I have to present to you. A well constructed perineum following Watkins operation is essential.

In type four, or procidentia uteri, we practically always perform vaginal hysterectomy after the method of C. H. Mayo. This will also be illustrated in the diagrams. I will state that this operation is simple and easy to perform, usually taking about thirty minutes altogether. It has given us such good results that we do not care to digress from it.

Results: This paper includes the report of fifty-five cases operated on by us. Average age 33, youngest 21, oldest 68, all multipara.

Namely, eleven shortening round ligaments and perineorrhaphy.

Thirty-two Watkins interposition operations.

Twelve cases of type four (complete procidentia) hysterectomy.

All the eleven cases of shortening of round ligaments and perineorrhapy none have shown recurrence. General health has improved, pain in the back has improved and general condition is good. Of the thirty-two interposition operations the mal position has been corrected in all cases not to recur. One case continues to be troubled with a chronic trigonitis, this chronic condition however has existed since the patient was twelve years or age, she is now forty-one and comes back to the office for treatment about once a year. The other patients have been heard from and most of them seen and re-examined and report most satisfactory results.

The cases in which hysterectomy has been performed have also been entirely satisfactory. Residual urine has cleared up, the bladder function is good. These results compare favorably with the general experience of other surgeons.

Namely, C. Jeff Miller, of New Orleans, reports 93 per cent excellent results following interposition operation.

Roland S. Cron, S. G. O. Nov. 1926, reports 90 per cent excellent results.

Edward Arthur Bullard, A. Journal Obs. & Gyn., May 1926, reports satisfactory results in 96 per cent of 77 cases interposition operations and satisfactory results of 94 per cent of series operated on after the Bissel technique.

Dr. Leo Brady, Johns Hopkins Gynecological Clinic, 48 cases 93 per cent excellent results.

C. H. Mayo operation by Bullard, 50 cases 94 per cent excellent results.

In the treatment of this condition the question of childbearing must enter into the subject. In women of childbearing age where the Watkins operation is performed sectioning of the fallopian tubes is essential. This we do by sectioning the tubes, burying the stump into cornu of the uterus and fixing the cut distal ends of the tubes on the posterior wall of the uterus. After menopause this need not receive consideration.

The condition of the bladder and kidneys must receive careful attention if one is to get the best results in this class of work. We find practically all of the cases coming to us with cystocele have a residual urine with cystitis. This in turn very frequently produces a pyelitis lowering the kidney function. We have had a few cases in old women that showed a

phthalein output of 10 per cent for two hours. Such cases have been going from bad to worse for many years and have been accustomed to living on a low kidney output. We try to keep in mind a similarity between this type of case and the old man with prostatic obstruction and give them practically the same line of preparatory and after treatment that we do the male patients. Keep the bladder clean, flush out the kidney pelvis if necessary and measure the kidney function until we get it well up before operation. The treatment of the bladder and kidneys following operation is most essential, the patient should be discharged with little or no residual urine and kept under observation until the bladder is free from infection and residual urine.

Conclusion: It is not the object of this paper to present anything new in gynecology but more especially to call attention to the procedures the value of which have been proved. I find so many operations that have been devised by various surgeons for the correction of gynecological troubles that I could not find tissue enough for me to devise a new procedure. It is my opinion that if we use a technique already described in so many good articles on this subject that we will be able to relieve more and more of these women of a horrible condition, a majority of them can be cured to stay cured.

The man that gets the most out of writing a paper is the writer himself for it is he who burns the midnight oil and chews lead pencil after lead pencil, writing page after page only to send them to the waste basket, but in the end the subject becomes clearer and clearer and he finds himself eventually out of the mist, where the horizon looks brighter. I wonder if the majority of us, in doing a general examination, give to the pelvis the attention to which it is entitled. Do we temporize with leucorrhea by the old tampon method and irrigation which make the condition worse or do we advise the proper procedure and cure the patient. Do we pay attention to the relaxed pelvic floor and the rents in the fascial planes of the pelvis and correct them before it is too late. I am sorry to say that my experience leads me to believe that a great many of us are not energetic enough in the care of our obstetrical and gynecological patients. It is a rather common experience to see a patient with procidentia uteri of ten, fifteen and twenty years standing with kidneys damaged beyond permanent repair and often times with a malignancy.

Difficult labors are prone to damage the pelvic organs especially in difficult forcep cases and in cases where the cervix is not fully dilated. Extracting a child through such pelvis will cause untold troubles to the mother if not properly cared for at the time of delivery. If not treated at that time the case should wait until the possibility of infection has cleared away and the damaged structures repaired. I wonder if we do not hurry our obstetrical cases too much in an effort to please the mother and family by performing a painless delivery or by the too ready use of pituitrin. I am sure some of my cases have been due to this faulty technique. If we visit the clinics of the leading gynecologists and obstetricians we find

practically all of them using conservative methods. Their complications and sequela, I am sure, are not as great as those of the obstetrician who sets the day for the mother to have the child in a painless way.

In a group of cases we find certain abdominal complications necessitating our entering the abdomen such as gallstones, tumors, et cetera. Only recently I operated upon a woman sixty-six years old who had had a procidentia for twenty years with indigestion and attacks of abdominal pain. She came down four weeks ago with acute pain in the lower abdomen, right side. On admission she showed great distress, quite tender in right pelvis and a small mass could be felt which indicated inflammation of the tube. She also had rigidity over right costal margin and a mass could be felt. She ran a high temperature at first but with rest in bed and an ice cap to lower abdomen, treatment of bladder and kidneys, the temperature soon reduced to normal and we operated by the abdominal route. We found the right tube and ovary bound down to the broad ligament by dense adhesions and the tube contained some pus. The region of the gall bladder was one large mass of adhesions and on separating the adhesions a very thick leathery remains of a gall bladder was found attached and opened into the duodenum. There were four large gall stones embedded in the liver. An incision was made into the liver, the gall stones removed, adhesions broken up, the fistula in the duodenum closed and abdomen drained. The procidentia was then treated after the method of Kocher. Where complications are suspected the abdomen should be opened. Several methods of abdominal fixation of the uterus in procidentia will be found described in the literature, many of these are good but as a general routine abdominal fixation is not practiced. This procedure finds its greatest usefulness in those cases in which the abdomen is opened for the purpose of correcting abdominal complications.

Every gynecological patient presents a definite problem both from a local and general standpoint. These problems must be analyzed and plans laid out for the treatment of the patient.

If one will apply a well established technique in his gynecological practice, only digressing to suit the unusual case, best results will be the reward. A careful study of the literature combined with frequent visits to other clinics will place the surgeon in a position to render better service to his patients.

DISCUSSION

Dr. R. T. Ferguson, (Charlotte): Mr. Chairman and Members of the Section: Dr. Lawrence has given us an excellent description of the various operations devised for this procedure and his claim that former operators had used up all the tissue and hadn't left him any to devise a new operation is gratifying, especially since there are so many operations already devised for this condition.

Likewise Dr. Lawrence has gone so thoroughly into the subject that he has used up all the literature and hasn't left anything for me to

discuss. Since getting a copy of his paper, I find he has covered practically every point that is necessary in the operative procedures for the cure of procidentia. The only thing that I could add would probably be prophylaxis. I believe if a little more prophylaxis were practiced and a little more care and a little more time given in delivery of women, we would see a great many less cases of procidentia. In my experience, most of the cases coming in are in older women. I have four cases on hand right now, all above sixty years of age. Three of them have blood pressure above 200. One has sugar in her urine. They are not usually satisfactory cases for operative procedures. One was in the office this week. She has a complete procidentia. She was examined by an internist three years ago, she tells me. At that time she had a small tumor in the abdominal cavity which she said the doctor told her was a "fibroid tumor of the gut." In my experience, fibroid tumors of the gut are comparatively rare.

At the present time she has a tumor at least as large as my head which appears to be coming from the left side of the uterus and is evidently an ovarian tumor. This tumor is trying to wedge its way out through the vaginal canal and is pushing the uterus out. I can push the uterus back in the pelvis and get my hands around the fundus of the uterus and feel it. The uterus is normal size practically, a little elongated; the canal is a normal depth, and I believe in this case if we can remove the tumor and do an Olshausen suspension, this case will get perfect relief.

The treatment of these cases has to be governed entirely by the individual case. The operation you will use to cure any one of them will have to be devised when you come to the case and the operations that have been devised are all more or less satisfactory in certain cases. Each operator has his own individual method of doing these operations, and if properly done, with the proper repair of the perineal laceration, you will get good results. I believe one of the main things in doing a procidentia operation is to be sure that you get a good repair in your cystocele and rectocele and perineum.

Dr. Charles I. Allen, (Wadesboro): I want to say I have enjoyed Dr. Lawrence's paper and especially the fine illustrations which he has shown, and I thoroughly agree with him in everything he has had to say about the third and fourth degree prolapse. However, I think we lay too much stress on a simple retroversion of the uterus for when we realize that sixty per cent of all multiparas and twenty per cent of all nulliparas on examination have a retroverted uterus. I don't think we should consider it a pathological condition.

Some fellow has said there is nothing in the Constitution of the United States which prohibits a uterus from occupying any position in the pelvis which it desires, and in simple retroversion uncomplicated by other conditions, in my opinion, it does not call for operation. I have learned by sad experience that if you take a nervous woman complaining of backache, you can't relieve the symptoms by fixing up a simple retroversion. (Applause.)

Dr. C. S. Lawrence, (Winston-Salem), closing discussion: I want to thank the gentlemen for the discussion. I think I mentioned the importance of the before and after treatment of these cases. I try to keep in mind two things in doing this work. One is that I am treating a hernia, the other is that I must sew to something that is well anchored. I must sew the uterus to something that is well anchored. I try to think of anchoring a boat in a river. If the anchor hangs in the mud or sand, the boat will drift with the tide. If the anchor hangs in the rocks, the boat stays fixed. So if you sew the uterus to fascia and muscles that is in turn attached to bone, you will usually get good results.

In regard to Dr. Allen's remarks, I agree with him on the retroversion proposition, but I had to have somewhere to start, Doctor, and I started with retroversion. You will notice that I did not have any operations to report for simple retroversion. All my cases were shortening the round ligaments and repairing the perineum and there were no cases in the series of operations for simple retroversion. (Applause.)

STERILITY

By Dr. Oren Moore, Charlotte

A sterile individual is one who is incapable of producing offspring; in other words, an unfruitful unit of society. This condition may be temporary or permanent, but until the latter is established, it is the duty of both the patient and physician to exhaust all reasonable methods of investigation and thereby determine the future outlook, in order that the many domestic problems which attend upon the barren marriage may be wisely adjusted.

The causes for sterility are numerous, but for practical study, they may be divided into two major groups: first, that group in which no viable egg cell is produced, and second, the group in which there is interference with union of viable egg cells and a resultant failure of fertilization.

To the first group belong those individuals whom accident, disease or surgery has deprived of germinating glands. They, obviously, are not producing viable egg cells, and in consequence are permanently sterile. In our present state of knowledge, nothing can be done to alleviate their condition, as even the most optimistic advocate of gland transplanting has never believed that such transplanted tissue will function for reproduction of a species. In the female, inflammatory thickenings of the ovarian cortex will limit the output of ova, because the Graffian follicle erupts with difficulty.

The so-called ovarian dysfunction which is of endocrine origin will necessarily prevent fruitfulness because of absence of ovulation.

In the second group, it is logical to begin at the lower birth canal, and take note of that class of malformation and distortion of the vaginal osteum and canal which mechanically interfere and prevent union of

cells. It is difficult to enumerate these various abnormalities, as almost any type of deflection from the normal can exist and has been described.

Normal reaction of the vaginal secretion is well known to be acid, while the normal media for the sperm cell is basic in reaction. It is, of course, therapeutically apparent that a hyperacidity will provide such an inimicable condition that the sperm will be either killed outright or so devitalized as to be incapable of fertilization.

The next point of obstruction is in the cervix which may be stenosed to an impassable degree. (The authors believe such condition to be exceedingly rare), or so swollen by inflammation as to be virtually nonpatent, but by far the most common obstruction in this location is that produced by the presence of a thick, tenacious plug of mucus which constantly bars this avenue to ascending sperm cells.

Going still higher, we encounter the endometrium with its variety of reactions to infection. In some instances, such as: hyperthrophic endometritis, with its resultant adenoid-like overgrowth, the moving sperm cell finds it impossible to proceed.

And now we reach the fallopian tubes who are old offenders in the matter under discussion; they are so frequently the terminal focus for Neisserian infection; their tortuous canals are so easily blocked by organized end products of infection and they are so frequently impinged upon or obstructed by bands of adhesions that they are by far the commonest location for obstruction to fertility.

Various methods of examination, which have been devised for determining tubal patency and mechanical equipment for the same purpose, are all worth our detailed study. Generally speaking, they are based on the mechanical principle of blowing air or some inocuous gas through the tubes (so-called inflation method), and are represented in general use by Reuben's apparatus or some modification of it. The author prefers Ferguson's adaptation as being simpler and easier to manipulate. Lately, the practice of injecting some chemical agent which is impervious to X-ray has received quite wide spread attention. Lipiodol is the agent of choice, and in many instances has proven quite effective in determining, not only the presence of obstruction, but its location.

It is obvious that a certain amount of hazard must accompany either of these procedures, but it is only fair to state that a very few cases of injury of any description have ever been reported. In the matter of lipiodol injections, it is essential that the accompanying X-ray study be made from a variety of angles, as the tortuosity of the tube and its inconstant location, especially after inflammation, makes it difficult, if not impossible, to secure correct readings when studied from antero-posterior or lateral views alone.

When the cause of sterility is determined, then appropriate treatment can be instituted, and our experience has led us to believe with considerable hope of success. As this paper deals with the female alone, we pre-

sume that before any investigation of her responsibility has been instituted that preliminary proof of potency in the husband has already been secured.

If there is reason to believe that the patient is not producing viable ovae, then proper endocrine therapy may do much towards remedying this defect. The various ovarian extracts are indicated and it is my impression that large doses are necessary to obtain early results. The obesity which so frequently accompanies ovarian dysfunction should likewise be treated by thyroid extract and carbohydrate restriction in diet. When these methods are instituted, along with a proper general regimen, a reasonable expectancy of restored function may follow.

If ovulation is definitely present, and no mutilating surgery or disease has been discovered in the history, then the search begins for obstructive conditions. As to vaginal hyperacidity, the author, with the assistance of Dr. Harvey P. Barret, has instituted a series of experimental studies to determine, if possible, what the average and normal degree of acidity is. This study, while still incomplete, has proceeded far enough to convince us that the normal acidity is not excessive and at present our belief is that hyperacidity plays very little part in the production of sterility per se. But our conviction is that it assists materially in such production, if there is even a short delay in the upward progress of the sperm, such as may be caused by mild cervical obstruction, as the sperm will not long survive in even a weak acid medium. (Describes methods of testing.)

Mild cervical infection frequently results in the production of a thick, viscid, mucous plug which adheres with great tenacity to the endocervical canal. This, in my opinion, is a very frequent cause of sterility, as it presents an impossible barrier to the sperm. Treatment directed at curing the mild cervicitis is seldom of much avail, as manipulation frequently increases the irritation of the muco-parous glands, but wiping out the plug and gentle dilatation of the canal repeated over several months time will frequently bring results. Surgery, such as amputation by one of the coring operations offers decided hope, and in my hands has resulted in thirty-six successes out of forty-seven operations.

In the so-called hyperthropic endometritis cases with thick velvety adenoid-like overgrowth on the endometrium, occasional curettage, coupled with ovarian substances, offer some hope.

In that type where definite inflammation of adnexae exists, one is frequently faced with the decision for or against surgery. Today there is a decided tendency to temporize and treat pelvic inflammatory disease rather than employ ablative surgery. Protein therapy, with the production of the so-called protein shock, is attracting more and more favorable attention, especially in European countries. The agents used are usually some preparation of milk many of which are on the market under various trade names.

In old tubal obstructions caused by resultant adhesions, tubal inflation will occasionally produce patency. If lipiodol injection shows the

obstruction located near the fimbriated end, then abdominal surgery, with the amputation of the diseased extremity, has been employed with occasional, but rare, good results. Very few observers are willing to offer better than a one in five chance of success.

When all treatments have failed, then we are justified in advising the adoption of a child, but not until then, for it has happened more than once that within a few years after adoption, nature has cured the defect which art could not and normal offspring arrives to compete with the adopted member.

In conclusion, I should like to state that unless absolutely positive evidence of incapacity exists, it is never wise to state dogmatically to any patient that she cannot become pregnant. Far too frequently nature in sarcastic mood reverses our decision and makes us "eat crow."

DISCUSSION

Dr. R. T. Ferguson, (Charlotte): If I might have these two slides thrown on the screen, I will back up Dr. Moore's statements. Dr. Moore used my apparatus because he knew I "was going to be in the audience." That is fine; I am glad he did that.

I am showing the slides in discussion of his paper to show you that the study of sterility is a very interesting thing. There are a great many points here. You can read them for yourselves, there is no use of my reading this to you. There are a few things I want to call attention to.

This represents 100 cases worked up in 1927 and the other series I worked up in 1928. It was quite a little job to get up the history and data on even 100 cases like this when you have all that to go through with to get it out. Every now and then when I haven't anything else to do, I work on a 100 cases.

There is one important thing in sterility that Dr. Moore has brought out. Don't ever tell a woman, no matter what condition you find, there is no chance for conception. One of my early cases, where the tubes were closed at 200 millimeters of mercury pressure, (that is as high as I ever carry it) was told there was no chance of her conceiving. She had been married twelve years and was crazy for a baby. She never menstruated again and became pregnant immediately and has been delivered of a fine baby. That case evidently got a little air through the tube at 200 when I stopped. So you want to be careful what you say to them.

About eight per cent of my cases have become pregnant after the use of this tube. That isn't a very large percentage, but it is a wonderful percentage in these women married anywhere from two to fifteen and eighteen years and have had no children. If you get one of them pregnant, she doesn't hesitate to spread it all over the neighborhood and the patients keep flowing in from that territory.

To prove that the test is absolute, I have operated on eighteen per cent of these closed cases. In this series, forty-five per cent of the cases

out of the 100 were closed. That is a terribly large percentage of the women who come to the office. Eighteen per cent of these cases that are operated on have all proven the test absolutely correct, that the tubes were closed in every case. There was no mistake in the diagnosis.

(Slide) The other is practically the same thing, except this second series had only 38 per cent closed. I don't know how the other men in the profession find it, but since I have been practicing medicine the last 24 years, I have been struck with the increasing number of cases of sterility due to venereal infection. Venereal infection I used to think was rather rare, especially amongst the better class of people, but, sad to relate, the better class is no better than the worst class now, and more and more women are becoming sterile from venereal disease and it is really a serious problem.

Perhaps some of you heard Dr. McPhaul's paper this morning (I wasn't present) and no doubt he gave you some figures on the prevalence of venereal disease. It was really astounding. Young unmarried women who come to the office, I find, are sterile from venereal infection. From seventy-five to eighty per cent of the cases who have venereal infection will be sterile. You can test them all you please and they will be sterile. The number of pus tubes that come to the gynecologist and the general surgeon is increasing daily. So the venereal question is a very serious question with all of us. (Applause).

Dr. Oren Moore, (Charlotte), closing discussion: There is very little to add to the paper which I regard as being very exhaustive. The treatment for hyperacidity—you don't have to have treatment, because, as I said, there is no hyperacidity. The old method of treatment, of course, was that of the German spa in which they put a perforated speculum in the vagina of the lady and let her bathe in a spacious pool, but they had to keep her there six or eight months and let her bathe four or five times a day. It is obvious to you that a teaspoonful of bicarbonate of soda in a pint of water will do the same as the spa, but these men owned the spa. (Laughter.)

That was the whole treatment at Whalebacken, in Germany, which was devised by a famous Englishman, if you remember.

The method of having them take an alkaline douche just before intercourse, Doctor, would be the proper procedure there. I am failing to admit there is a high degree of vaginal acidity in any great number of cases. Our experience has proven there is no higher degree in the sterile cases than the non-sterile, that they run just about together.

Dr. Ferguson's observation on the prevalence of venereal disease and its great increase is interesting. I don't know whether there are any statistics to show whether it previously existed at this rate or not. I do know at one time in the sixteenth century, an army under one of the Louis in France started to invade Spain and they had Spain by the tail. There wasn't any question about that. They had a big army and it was just a matter of getting there. The Spanish ladies met the French soldiers

some two or three weeks later on the frontier, and by the time Louis' army reached the front it was sixty per cent incapacitated.

The integrity and autonomy of that great country of Spain might very properly be attributed to venereal disease. It does not belong to France.

Howard Kelly, away back there in 1907, said out of all the males of over twenty-one years of age in the city of Baltimore, eighty-three per cent had had, or were now having gonorrhea. (Laughter.) So the percentage doesn't seem to be any greater in this generation than it did back there. I am willing to believe the type who have obstructions, however, from gonorrhea are the type that often have hope in the future of clearing up.

Old tubal involvements are the ones that best respond to your protein shock cases. It is a fact, in all seriousness, that the European surgeons are getting a lot better results, medical men are getting better results by treating old inflammatory pelves than we are by operating on them. They are doing it. The birth rate must be increased in Germany and in France. They don't want women sterilized by ablating surgery. So they are going into the real investigation of it and giving them treatment, and they find women are clearing up and having babies who had previously fallen into the classification for operation, for sterilizing operation, so it is quite worth while to try it out.

We don't need babies as badly as they do over there, but neither do we need surgery as badly as they do over there. The death rate in pelvic surgery in Germany is certainly a great deal higher than the death rate in America when they attempt pelvic surgery for inflammatory disease.

I am very much obliged to Dr. Ferguson for his discussion and for your kind attention. (Applause.)

THE CARE OF THE EXPECTANT MOTHER

By W. Houston Moore, M.D.
Wilmington, N. C.

I realize that my choice of a subject may seem to many of you the repetition of a familiar story but I feel that sufficient importance has recently been given to prenatal work to assure me that the theme is one of merit. Its importance is proved by the fact that it was the choice of subject for the Chairman's Address in the obstetrical section of the Southern Medical Association in 1924, and DeLee emphasizes what is indeed a regretable fact that while the majority of physicians today realize the importance of constant supervision of even the thoroughly healthy pregnant women, prenatal care in all its details has not yet become an established practice with all doctors, though he adds that the public is slowly waking up to the necessity of such supervision.

Unquestionably there is no field in preventive medicine which offers the prospects of such glittering returns in checking human misery and

saving human lives. Statistics show that 25,000 women and 250,000 babies lose their lives yearly as the result of childbirth. Of the women who recover, fully one half of them suffer for years from the effect of labor. Approximately one half of our gynecological operations are necessitated by the damage resulting from labor. Nowhere in nature do we find a normal process which is associated with such a frightful number of deaths, with as much trauma and as much permanent invalidism as results from childbirth; for these reasons we cannot call labor a normal process.

Fortunately these conditions are remediable. Careful observation of patients during pregnancy and the proper conduct of labor will considerably reduce the maternal and foetal mortality and morbidity. Prophylaxis is most essential in pregnancy and for its success education of the public is necessary and it is up to the doctor to see that they receive that education. The layman must be made to understand that a labor case begins at the time of conception and that it is important for the pregnant woman to see a physician as soon as she knows she is pregnant. Keep herself under his strict supervision throughout her pregnancy and confinement and return for a final examination six weeks after she has recuperated.

As ascertained by Louis Dublin, only two women out of 1,000 die of childbirth after receiving prenatal care as compared with seven out of 1,000 when such care is not received before childbirth. Only 13 babies instead of 40 out of 1,000 died before they are one month old, and only 12 instead of 45 per 1,000 are stillborn. This indicates not only the advantages of prenatal care but the need of it. The figures presented for the United States are not very good as compared with other countries. The maternal death rate is as high as in any other civilized country in the world, and the infant mortality is 78 per 1,000 as compared with 45 per 1,000 in New Zealand which is the lowest. Some countries have an infant mortality of 300 per 1,000. These estimates put out by the Minnesota State Board of Health, lead one to realize the need for better care of the mother before, during, and shortly after childbirth. The Minnesota Board of Health is doing much to reduce our infant and maternal mortality which as among states stands comparatively rather favorably. As soon as a woman suspects she is pregnant she should consult her physician for much depends upon the early recognition of pathological conditions as to the subsequent welfare of the mother and child.

History. During pregnancy there are certain fundamental things a physician should do. First of all it is essential that a complete history (especially along certain lines) be taken. In the family history the childbirth experiences of the patient's mother and sisters may give some clue as to the patient's obstetrical possibilities. In the patient's past history certain illnesses, especially infections, should be noted and also any operation, especially abdominal ones. If the patient is a multipara her past obstetric history is important, because as a rule a woman will show

her obstetric form in her first labor. A history of miscarriages, their time of occurrence, and other data may help. These histories should be kept permanently.

Physical Examinations. The next thing is a careful physical examination which should include not only heart and lungs but also possible sources of infection such as the teeth, tonsils, sinus, etc. A history of, or evidence of gonorrhea or syphilis, is very important. If there be a history of miscarriage a Wassermann test may help. If either gonorrhea or syphilis be found immediate treatment should be started and pushed until patient is free of the disease.

A careful pelvic examination should be made and if possible the positive diagnosis of pregnancy made. The size, shape, consistency, and height of uterus, especially noted. Detect if possible the existence of any pelvic tumor. Also the shape and size of the bony pelvis. Careful pelvic measurements should always be taken. The blood pressure should be recorded and the urine analyzed so that you may know in the beginning whether patient is suffering from any kidney disease or high blood pressure. The future examinations can be checked against these for comparison and toxemia which may develop, be recognized early and the treatment started.

Any pathological condition found at this examination such as infected teeth, tonsils, sinus, venereal infections, etc., should be removed so as to prevent the nephritis, toxemias, and miscarriage which these are likely to cause later on in pregnancy.

After having determined that no marked complication exists, or in other words, that the patient is, from a physical and obstetrical standpoint, normal, the next consideration is what constitutes safe and adequate prenatal supervision.

Probably the two most important things to watch in the apparently normal patient are the blood pressure and the urine. Examination of these should be made at least every two weeks during the first half of gestation and once each week the latter half and more frequently if any trouble is found. The urine should be examined especially for albumin, sugar, pus and casts. A small trace of albumin with casts in the early months usually means a chronic nephritis and when found in the latter half, especially if free in the early stages, means either beginning toxemia or acute nephritis. Pus indicates pyelitis or cystitis. Pyelitis when associated with fever and pain in the kidney region and cystitis when associated with frequent and painful urination and pain just above the symphysis.

Sugar in the urine may or may not mean diabetes. If small in amount and no attendant symptoms, it is probably galactose. The fermentation test will differentiate between galactose and dextrose, the former giving a negative and the latter a positive reaction, if negative no undue concern need be felt as the phenomena is merely the presence of milk sugar from the lactation function. If in doubt, a blood sugar

determination is valuable. While the presence of sugar during gestation is rather frequent yet a true diabetes is comparatively rare, but when it does exist, it offers a very serious and dangerous complication.

The blood pressure readings are also of prime importance. During pregnancy the systolic pressure is usually somewhat lowered in the early stage, the usual reading being from 100 to 120 m.m. A sudden rise of 15 to 25 m.m. should put us on our guard. The diastolic pressure is hardly less important. The difference between the diastolic readings or pulse pressure should be at least half as much as the diastolic reading. As the diastolic reading is the indication of the amount of pressure exerted in the arteries when the heart is at rest, an elevation of the diastolic pressure usually means an irritating element acting upon the heart muscle, preventing adequate relaxation of the heart myocardium. An elevation of the diastolic is often an earlier sign of toxemia than is the rise in the systolic pressure.

A thorough obstetrical examination should be made from three to six weeks before the expected date of confinement. A vaginal examination will reveal the condition of the vulva, perineum, vagina, and cervix. The amount of dilatation noted, the height and identification of the presenting part, whether or not the sacrum can be felt and a general determination of the proportion between the child and the passage. The presence of obstructing tumors may thus be discovered. Abdominal examination will reveal the height and size of the uterus, the location, rate and character of foetal heart sound, the lie of the foetus and whether or not the pregnancy is single or multiple.

While it would be impossible to say just what would constitute a minimum amount of prenatal examination, yet no less than the foregoing could possibly be considered as adequate even in any normal case.

The instructions given each patient regarding her mode of living and personal care will of course vary somewhat with her surroundings and environment. Yet suitable advice in these matters will aid greatly in keeping the patient a normal case.

The following items are suggestions which may be found helpful:

Exercise. All strenuous exercise is to be prohibited. Heavy lifting, work to the point of fatigue, severe reaching, sudden jars and vigorous calisthenics are harmful. Such sports as horseback riding, swimming, tennis, basketball and golf should be avoided. Long automobile trips or short rides over rough roads often produce miscarriages. Short rides over smooth roads are beneficial. Light house duties are helpful. In fact I have never seen any reasonable house work do injury to any pregnant patient. Outdoor walking is probably the best form of exercise. To the normal patient a one or two mile walk in the open air, walking slowly and breathing deeply, is especially beneficial. Dancing when indulged in to the point of fatigue, or forms of modern dancing, is harmful.

Especial care should be exercised around time of menstrual cycle.

Bowels. The bowels should move once daily. Much can be done by diet and exercise. Strong purgatives should be used only as an emergency measure. The salines are perhaps the best laxatives in pregnancy. Enemas should be used sparingly and the water should never be hot. Warm water without irritants should be employed.

Clothing. Clothing should be comfortable. In warm weather loose garments are best. In winter warm clothing is very desirable. The shoes should be comfortable, the heels not too high. Circular garters are not to be worn. The stockings should be held up by straps from the shoulders, or from an abdominal girdle or maternity corset. After the abdomen begins to enlarge, a properly fitting maternity corset gives good results. If the breasts are pendulous they may be supported by a properly fitting bust supporter.

Bathing. Especial care should be exercised to keep the skin clean, warm and active during pregnancy. Much work is saved the kidneys by skin secretion during this time. A daily warm (not hot) tub bath with mild soap is very beneficial. Cold bathing of any kind is unwise. Toward the end of pregnancy a warm shower or sponge should replace the tub bath, lest germs from the bath enter the vagina and cervix.

The Breasts. In supporting the breasts, no pressure should be exerted on the glands, they should be kept warm and protected against injury. During the entire time the nipples should be kept clean with frequent bathing with mild soap and water. In the last few weeks of gestation they should be gently massaged with vaseline or alboline to prepare them for the traumatism effect of the baby's nursing. Slight traction on the nipple may be made during the massaging process especially where the nipples are small or retraced. No astringent wash should be used. In case of tender or sore nipples a nipple shield is a valuable protection.

The Teeth. During pregnancy the acid condition of the mouth makes the teeth particularly susceptible to decay, therefore they should be kept scrupulously clean. Temporary filling and the extraction of diseased teeth should be done. There is a constant call on the mother's system at this time for calcium and if the food does not contain enough the teeth may be depleted of some of the calcium content.

Heartburn may be prevented or relieved by the use of soda mint tablets, bicarbonate of soda, or milk of magnesia.

Sexual intercourse should be avoided during the first and last six weeks of pregnancy and at the menstrual epochs. To many women it is distasteful during the entire pregnancy, in some the desire is intensified. It is not particularly harmful in moderation, especially at the instance of the woman under favorable circumstances.

Leucorrhea is a very common problem during pregnancy, during this time the normal discharge being frequently excessive to the point of discomfort. Generally speaking, vaginal douches during pregnancy are a source of danger, but with a troublesome leucorrhea it may be necessary

to employ them in the interest of cleanliness. A mild boric acid cleansing may be used. The water should not be hot, nor cold, a short nozzle used, and the bag not higher than the waist.

Diet. The diet during pregnancy should be simple and well diversified. During the first half of gestation the tendency to acidosis and the carbohydrate needs of the developing foetus require such articles as the citrus fruits, cereals, and the restriction of fats and greasy foods. During the entire time of pregnancy, highly seasoned indigestible or fatty things should be forbidden, especially important are use of foods containing vitamin B, such as whole wheat bread, brain or foods containing the husks of cereals. Green Vegetables and milk should be used freely, for their calcium and iron contents. Lean meats may be used in moderation if no kidney lesion develops. Abnormal cravings should be gratified if not actually harmful. Alcoholic beverages should be prohibited.

At present a good deal of investigation is being done along the lines of restricting the size of children at birth through means of maternal diet control. The work of Prochonwick, confirmed by Reeb, and Noll Paton, shows that a diet poor in carbohydrates in the latter months of pregnancy exerts a favorable influence in lessening the weight of the child without otherwise affecting it. Williams says, "these precautionary measures may obviate a difficult delivery or even do away with the necessity for the induction of premature labor." I have found that not nearly such good results are obtained unless the diet schedule is combined with the regular daily walks and that household duties however strenuous do not take the place of a continuous outdoor walk.

Slimons and Fagan, in an article published in the August 1927 issue of the American Journal of Obstetrics and Gynecology, give some very interesting information along the lines of weight restriction. In a study of 500 consecutive cases they showed that the gain in the mother was practically in direct proportion to the size of the infant.

A table of their findings follows:

Weight of infant	*Number of cases.*	*Per cent of series.*	*Average gain of Mother*
5 to 6 lbs.	34	6.8%	11 lbs.
6 to 7 lbs.	132	26.4%	14 lbs.
7 to 8 lbs.	205	41.0%	17 lbs.
8 to 9 lbs.	107	21.4%	10 lbs.
9 to 10 lbs	19	3.8%	24 lbs.
over 10 lbs.	3	0.6%	26 lbs.

It would seem from these findings that much can be done along the line of restricting the size of the infant by following their methods.

Slimons and Fagan suggest the following diet in cases where restriction of the birth weight of the baby is desired.

Breakfast. Coffee or tea with toast and very little butter.

Mid-morning. A cereal with milk, no cream.

Luncheon. Bread with an egg, or soup, or salad.

Mid-afternoon. Orange juice, tea or bouillon and crackers.

Dinner. One chop or the equivalent of some other meat; two vegetables in moderate quantity and without a second helping; a simple dessert, preferably fruit. I especially emphasize the use of green vegetables and ripe fruits.

The mental condition of the patient should be kept placid and cheerful. The woman, especially with her first baby, is often beset by the recounting of friends and neighbors of all the harrowing experiences they have met or heard of until the wonder is that they remain as cheerful as they do. The physician should early gain the confidence of his patient, assuring her of his ability to handle her case safely, and that with the developments of modern obstetrics his power to rid labor of its horrors and severe suffering. Especially should he relieve her mind of the dangers of marking her baby through unfortunate maternal impressions. She should be encouraged in the enjoyment of proper amusements of pleasurable and profitable reading and cultivation of a cheerful and happy disposition; fearing no ill, but trusting her case implicitly into the care of her physician, the captain of her comfort and safety.

DISCUSSION

Dr. John R. Paddison, (Kernersville): Mr. Chairman, we have heard from the obstetricians on Dr. Moore's paper. I think we ought to have just a word of appreciation from those of us who are doing general practice. Personally I enjoyed his paper very much, and I know those of us who are in general practice enjoyed it just as much, or more, than the man who is doing obstetrics alone. In my own personal experience I have my patients pretty well trained in letting us examine them and we make frequent examinations during the period of pregnancy. It has had a wonderful effect on the results that we get in our obstetrical work. I haven't seen a case of eclampsia in so long, though I had better knock on wood while I am saying that. We have seen a lot of those cases in the past, but even in the smaller towns we are not seeing many of them at the present time.

I just want to thank Dr. Moore from the standpoint of the general practitioner for this paper.

Dr. Oren Moore, (Charlotte): I want to rise to the praise of this paper also. Dr. Moore's statement, somewhat of apologetic nature when he started out, is, to my way of thinking, entirely out of order. No man ever need apologize for a paper on prenatal care. Our statistics are too full of glaring instances of the tragedy that follows the lack of prenatal care. If you reiterate at every meeting, Doctor, and if we continue to reiterate, I am sure it won't be too often. I am so thoroughly taken with it I want to take the liberty of quoting from a paper I am to read in another section.

"The careful supervision of pregnant women is, to my way of thinking, the soundest insurance against infant mortality. If the mother is brought to confinement in splendid mental and physical health, she has gone a

long way towards assuring her child of a future robustness. No branch of medicine pays such dividends for time and thought spent as does prenatal care, for in no branch do we find such wide ramification of influence as in this field: in safeguarding the expectant mother, we safeguard the child, protect the home, and lay a secure foundation for future society. I might also state in passing that no branch of medicine pays such royalties in dollars and cents, as there is a growing appreciation, on the part of the layman, of such skilful attention, and even more than appreciation, there is an undoubted demand, and the wise physician will recognize its justification and prepare himself to furnish it."

The outstanding thing that occurred to me in your paper was the stress you laid on frequent examination with blood pressure machines. I am convinced if I had to give up one method or the other of apprehending the approach of a toxemia, I would surrender the urinary examinations in favor of keeping the blood pressure machine. It is so much simpler to use a blood pressure machine, so much easier to use a blood pressure machine, and it gives so much earlier notice of the approach of the toxemia than does the actual change in the urinary secretion.

Like Dr. Proctor, I have established the average increase in the mother as being fifteen pounds, as what I would permit her to gain, if I could. I believe that is enough for the average woman to gain during pregnancy. The table you had there was entirely new to me and I am glad to have heard it.

The one thing I wanted to add to your statement about exercises and so on, horseback riding, golfing, automobiling, is that the obstetricians in the group will appreciate the fact about automobiling. Every day in a town the size of Charlotte or Wilmington or Greensboro or Winston-Salem, people going through from one point in the North to some point in the South, or vice versa, call up to know if they can continue their journey because some woman is pregnant and about to have a miscarriage.

I want to add to it that we should also instruct the ladies not to go to football games and prize fights and concerts and crowded quarters. So frequently the well-known and oft-repeated call from the stage or grandstand is "Is there a doctor in the audience?" You will note some lady has tried to combine pregnancy with pleasure. (Laughter.) So the veteran doctor knows when he gets out there he is going to be called on. I used to stay at the automobile races in Charlotte and occupy one of the grandstands where most miscarriages occurred. They put me there for that purpose. (Laughter.)

Dr. Ivan Proctor, (Raleigh): This is one of the most important subjects in obstetrics. It is one of the most interesting.

De DeLee said that any of us could do a Caesarean section, but it took an artist to deliver from below. Most any of us can work out a spectacular technic, but it is a hard job and a monotonous one to carry out the proper and adequate prenatal care. Dr. Moore has certainly thoroughly covered the subject. I am particularly interested in one point he

brought out toward the last, about limiting the weight of patients. I believe men in the country, men in the city too will get rid of more difficult cases by watching the weight of their patients than by any other one thing they can do. I am a firm believer in thorough prenatal care, measurement of the pelvis and everything else we can do to safeguard these patients, but we can't change the pelvis. We can change the baby. The way we can change the baby is by limiting the weight of the patient.

In my opinion, a patient should gain seven pounds for her baby, a pound and a half for the placenta, a pound and a half for the water, two pounds for the uterus and three pounds for herself, the average patient gaining a total of fifteen pounds. Give them twenty-five per cent increase over that and say that the average patient should not gain over twenty pounds. In other words, she shouldn't gain over a half a pound a week throughout the entire pregnancy. Many of them lose during the early part of the pregnancy and many of them gain very rapidly during the latter part. For the forty weeks of pregnancy, a half a pound a week is as much as any woman ought to gain. If we will pay attention and take these weights, weekly or twice a month and keep the patient, by regulation of the amount of diet that she has and her elimination, down to half a pound a week, we will get rid of many of the difficult labor cases.

Dr. J. S. Brewer, (Roseboro): Dr. Moore mentioned a point I wish to emphasize, and that is the question of the diastolic blood pressure. To my mind, the diastolic blood pressure in case of pregnancy, particularly if there is any evidence of previous nephritis, is much more important than the systolic. My observation is when the diastolic blood pressure reaches 100, you had better look out. If it gets up in the neighborhood of 110, the patient is almost certain to have a kidney breakdown before pregnancy terminates. We see so many cases of nephritis during pregnancy, and as we hear a great deal of talk at the present day about the care of people at about the age of forty or fifty, that is where the obstetrician can render a wonderful service to women patients in being careful, particularly careful with these women who are nephritics. Or we will see a certain class we might term potential nephritics. Every time they are pregnant, they have a little trace of albumin in the urine and a little increase in the blood pressure, but for practical purposes after the pregnancy is over that clears up. I don't believe that those women are eclamptic or toxemic, they are potential nephritics and unless they have an especially good type of prenatal care when they reach the age of thirty-five, forty, or forty-five years, they are going to be chronic nephritics, and in a few more years, they will pass from the scene.

The great problem of prenatal care is one of education of the public. I think that the doctors of North Carolina are fully awake to the possibilities of prenatal care, but the problem is to get complete cooperation on the part of the public. This is where I think our health departments, city, county, and state, can come in and also I sometimes have an idea that the local county medical societies might through some concerted and

cooperative plan of association with the health departments render an effective service in bringing this problem of proper prenatal care before all the people.

Dr. W. Houston Moore, (Wilmington), closing discussion: I do want to say that while every doctor nearly knows the importance of it, they ought to get right down to giving the patients proper prenatal care and see that they are educated. By giving this prenatal care, we will prevent the cases of eclampsia and nephritis that they carry throughout life, and even if they escape eclampsia or recover from it, that nephritis does exist right on and shortens their days. We will prevent a great many of these causes for inducing labor, or doing a Caesarean section or using forceps or delivering by other methods, and if they receive this prenatal care, a great number of these babies that are dying will be saved. We will save about 20,000 women and about 100,000 babies in the United States each year by giving this prenatal care, and those babies that do live won't suffer with intracranial hemorrhages and other things. In other words, labor will go on in a normal way and you won't find it necessary ofttimes to use forceps. If your patient is in good shape when she goes into labor, you need not worry. Ninety-nine times out of one hundred, she is going to come through all right, providing the proportion between the size of the infant and the pelvis is all right. Thank you. (Applause.)

TUBAL PREGNANCY

By David Rose, M.D., Goldsboro

I have chosen the subject of my paper out of consideration to the general practitioner, the man of whom it has been said does the least and gets the least pay (nothing was ever more incorrectly said) for in many cases and particularly in tubal pregnancy he is the captain of the ship who says hoist or lower the sails. No single subject in medicine or surgery demands a more liberal knowledge or keener sense of judgment than the proper management of tubal pregnancy. When a practitioner carefully takes the history, makes the physical examination, and immediately sends the patient to a hospital for surgical treatment, the greater part of the battle has been fought and won. It is to this man I pay my respects and tribute.

Much has been written on tubal pregnancy and many theories have been advanced as to its etiology and symptoms complex. Many individuals report a large number of cases with a very low mortality and in reading these reports one would be prone to think there was little to be added to the present knowledge of the condition, but a statistical study of a large number of cases handled by a group of well-trained observers show the mortality to be much higher than it should be. Hawkes reports a mortality of 17 per cent in postponed operations and 8.8 per cent in immediate operations; Schanty reports a mortality of 30 per cent; Veit a mortality of 25 to 28 per cent, and a recent study of 211 cases by Dr. Sellars of

New Orleans shows a mortality of 12.5 per cent. The last group of cases were handled by fifty operators. From the above facts we readily see when handling a case of tubal pregnancy that we are dealing with a very serious condition, a condition which places life in extreme jeopardy and an accident which may happen to any wife in the most useful period of her existence.

The infrequency of this misfortune has its exponents, due, I'm quite sure, to the fact that the actual condition is unrecognized. Hawkes states that it occurs in most forms of lower animals as the ape, cow, bitch, monkey, and swine. A. B. Spalding found among 2,925 women with pelvic disorders one ectopic in 227 cases and one ectopic in 137 pregnancies. He also found 17 per cent of ectopic pregnancies in 86 currettages for possible abortions. The Johns Hopkins Bulletin reports 1.3 per cent of tubal pregnancies in a study of 22,688 gynecological cases. The Woman's Hospital in New York shows 1.5 per cent in a study of 19,694 such cases. Charity Hospital of New Orleans shows 1.02 per cent in the same type of cases.

A summary of the above facts merely directs our attention to the importance of the subject we are dealing with.

The mechanism of tubal pregnancy is unquestionably a field in which there is unlimited work for the student of scientific research. Many theories as to its mechanism have been advanced, but none have been definitely proven. No doubt more progress would be noted in its physiology were it possible to study a larger group of cases in their incipiency. When the diagnosis of the condition is made the pathological changes have already destroyed the normal anatomy of its implantation. When we study the physiology of pregnancy it is surprising that we do not encounter more tubal pregnancies than we do. As it is, it has been definitely proven within the past five years that the meeting and mating place of an ovum and a spermatazoa is in the fallopian tube. While it is true that the greater part of the work on tubal pregnancy has been done within the last half century it is interesting to note that 211 years ago a great French scientist, Pierre Dionis, advanced a theory as to its etiology which has not been disproven to this day. He said, "If the egg be too big or if the diameter of the fallopian tube be too small, the egg stops and can get no further, but shoots forth and takes root there and having the same communication with the blood vessels of the tube, being capable of no such dilatation as that of the uterus, breaks at last and the foetus falls into the cavity of the abdomen where it sometimes lies dead for many years and at other times occasions the death of the mothers by breaking open its prison." Dionis was correct so far as he went, but he failed to recognize certain pathological conditions which unquestionably predispose to pregnancy in the tube. Any anomaly of the tubal lumen whether an obstruction from without or from within are predisposing factors to the occurrence. I am of the opinion that the results of pelvic infections play the most prominent role in the chain of the numerous causative factors

advanced. Polak is of the opinion that a very common cause is abdominal operations for acute lesions with resulting drainage. The three most common sites of tubal pregnancy are (1) in the free end of the fallopian tube 76 per cent; (2) isthmic portion 21 per cent; and (3) in the intramural portion of the tube 3 per cent. The subsequent termination of tubal pregnancy is determined principally by its location. If the pregnancy is in the free end of the tube the probability is that the rupture of the abortion will take place into the peritoneal cavity; if it is in the isthmic portion the lesion will occur in the broad ligament; while if the implantation is in the intramural portion of the tube it will be into the uterine cavity. The location and termination is largely responsible for our failures to recognize this accident. For instance, if the abortion is into the uterine cavity the foetal and maternal placenta will be expelled from the uterus and we credit the woman with an ordinary uterine abortion.

The symptomatology and diagnosis of tubal pregnancy open a discussion of a large and somewhat confused subject. Students fresh from lectures and textbooks on obstetrics and gynecology reach the conclusion that a diagnosis of tubal pregnancy should, in the majority of cases, be made before rupture occurs. This situation, however, rarely ever happens. According to Schumann, even in the hands of expert gynecologists the diagnosis of unruptured tubal gestation is more noteworthy by the high percentage of errors than by the frequency with which correct conclusions are reached. While I know that I am not expressing the opinions of many of our best trained diagnosticians, I am of the honest conviction that a positive diagnosis of unruptured tubal pregnancy is rarely ever made, the term rupture being used in the broad sense to include any separation of the ovum and its envelopes with hemorrhage. I consider a carefully taken history of more diagnostic value in this catastrophy than any other factor. It is true that in a given strata of life a history is difficult to obtain which will be of any value. When a patient presents herself for examination in the great majority of cases she will give a history of cessation of menstruation and irregular bleeding varying from a simple "spotting" to a profuse flow in over 90 per cent of the cases. Until degeneration or destruction of the ovum or until the ovum is separated from its envelopes the maternal placenta does not begin to separate and hence there is no visible hemorrhage. Since this is true and since the history is so important in making a correct diagnosis, hence my reason for doubting a positive diagnosis on unruptured tubal gestation. The patient likewise gives a history of pain. The pain is usually more marked on one side than the other, may radiate down the pubes, or in case rupture has occurred and there is blood in the cul de sac of Douglas the pain radiates toward the rectum and is intensified in the act of defecation.

The pain is more common in the right lower quadrant of the abdomen due to the fact that tubal pregnancy occurs twice as frequently on the right side as on the left. The pain varies from a simple throb in the unruptured cases to the typical stabbing pain when an acute rupture

occurs. Most cases of acute rupture from the beginning show the usual signs and symptoms of an internal hemorrhage with accompanying shock. Pain in such cases is due (1) to the efforts of the tube to expel the dead ovum by vigorous peristaltic action of the part of the tubal musculature; (2) to the irritative effect of the blood in direct contact with the peritoneum; and (3) from pressure of blood clots and force against the sensitive peritoneal surfaces. With acute rupture, fainting is a common symptom. According to the Johns Hopkins Hospital Bulletin the ages in these cases varied from 20 to 47, there being 84 per cent between the ages of 20 and 35. The history of absolute sterility is an unimportant point in the development of a diagnosis while the passage of a considerable interval of time between the last pregnancy is usually regarded as significant in an etiological sense. A history of pre-existing pelvic disease of any degree or type must of necessity be of prime importance as a causative agent. The general health and the medical history of the patient seem to have no bearing on the development of such a pregnancy while previous abdominal operations undoubtedly render the patient more liable to tubal pregnancy. Bimanual examination is of great value, but is often abused. Great care and gentleness should be used and the patient should never be examined under a general anesthetic as rupture of the tube may occur or trauma increase the hemorrhage in case a rupture has already occurred. In the examination you will find that the cervix is not as soft as in a normal pregnancy. The uterus may be slightly enlarged owing to the stage of development of the pregnancy, but this point is of little value affirmatively.

I think the most significant point in this examination is the extreme pain and tenderness on movement of the uterus. A mass varying in size determined by the age of the condition may be palpated on either side of the uterus or in case rupture has occurred in the cul de sac of Douglas. This mass is tense, tender, fluid, pulsating, and grows rapidly. Puncture or aspiration of the cul de sac may demonstrate the presence of dark fluid blood. A microscopic examination is of great value and practically establishes the diagnosis when decidual tissue without chorionic vili is found. Of course if chorionic vili in the decidual tissue is found the diagnosis of intra-uterine abortion is established. Upon further physical examination the face is anxious though usually not pallid, and the mucous membranes retain their healthy tint. The abdomen is distended, moderately tympanitic, and extremely tender to pressure. Marked rectus regidity is the rule, usually more intense on the affected side. The pulse ranges from 90 to 100 and the temperature from 99 to 100.5. The respiration is usually shallow. The leukocyte count rises immediately after a hemorrhage and then drops in a few hours practically to normal. When there is a recurrence of the hemorrhage the blood count immediately rises again. The blood sedimentation time in tubal pregnancy runs from 105 to 110 minutes while in inflammatory conditions it is not more than 40 to 60 minutes.

In my experience I have found this test to be reliable and of great diagnostic value.

There is no gynecological operation in my opinion where prompt diagnosis, immediate operation, conservatism and dexterity are at a greater premium than in handling ruptured tubal gestation. The old expectant plan of treatment is something to merely read about and nothing to really think about in handling such a condition. I agree with Hawkes that immediate operation is advisable. Do not wait for shock or symptoms to subside. Ethylene or nitrous oxide anesthesia is preferable. Minimize shock and hemorrhage as much as possible by elevating the foot of the bed, applying external heat, and administering morphine freely.

No stimulants should be given unless the shock is too profound until the bleeding point is clamped. When the peritoneal cavity is opened, do not attempt to remove any more clots of blood than are necessary to expose the bleeding point. Time lost in trying to remove blood and pack off the intestines will sometimes mean the loss of the patient. As soon as the bleeding point is clamped, immediately start the intravenous infusion. I do not think it advisable to attempt any other operative measure at this time even if the patient's condition is fair. Whenever possible, there should be an earnest effort to conserve the ovary. Granting that the patient's condition is fair, I toilet the abdominal cavity to the extent of removing the blood clots. Normal saline is instilled into the cavity and the wound closed without drainage.

SUMMARY

1. I believe that the mortality of tubal pregnancy is too high and can and should be lowered.

2. The majority of cases of tubal pregnancy occur between the ages of 20 and 35 years of age.

3. An intelligent and carefully taken history is the most important single factor in making a diagnosis of tubal pregnancy.

4. Bimanual examination shows a sensitive cervix and uterine bleeding.

5. The leukocyte count rises rapidly immediately following acute rupture of the tube. The sedimentation time is long.

6. Immediate operation without stimulation until bleeding is controlled, rapidity in securing and clamping the bleeding point, and limitation of operative procedure are vital factors in saving the patient's life.

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DISCUSSION

Dr. Oren Moore, (Charlotte): I would, like Dr. Ferguson, crave your indulgence for rising so many times, but I want to report what is unusual. Six or seven months ago I operated a case of normal three-months pregnancy in utero with ruptured ectopic on the left side at the same time. She delivered a normal baby and the husband gave me two city lots in payment. (Laughter.)

Dr. C. S. Lawrence, Winston-Salem: In the diagnosis of ruptured ectopic pregnancy there are two symptoms that I rely upon more than any other. These are, first: sudden sharp cutting pains in the lower abdomen. Second, fainting.

When I am called to see an emergency or when a patient is admitted to the hospital complaining of lower abdominal pain the two questions that I ask, first, did you have sudden sharp cutting pains? Second, did you faint?

One has to be quiet and tactful in obtaining the history, especially in regard to fainting as oftentimes these patients are taken suddenly ill at night and do not remember as to whether they did or did not faint.

In a recent case the patient was taken ill at midnight, she lived in the country, the home being equipped with oil lamps. She was necessarily in the dark most of the time. By close questioning, however, I found that she became unconscious immediately following the severe pain.

Besides these two leading symptoms there are other important diagnostic signs which should be carefully correlated. The vaginal bleeding is of two types, one in which a cast of the uterus is past, the other in which there is an intermittent discharge of blood extending over a period of days. The history usually shows that the patient has passed one or two menstrual periods and thinks she is pregnant. Where there is rupture with blood in the peritoneal cavity the leucocyte count is as a rule unusually high.

In treating these patients we give them supportive treatment such as morphine and atropin hypodermically. In the meantime prepare for immediate operation. It is our custom to operate under spinal anesthesia. While the operation is going on blood transfusion, or salt solution intravenously is given when indicated. After the patient's return to bed body

heat is applied by means of the photo light and hot blankets with morphine enough to keep the patient quiet. The intake of fluids should be forced to the limit.

Over a period of years of experience in surgery one sees now and then rather rare cases. Two years ago I operated upon a woman for ectopic pregnancy, ruptured through the right tube; she made a good recovery. In less than six months I was called to see her again, in consultation with her family doctor, and found that she had ectopic ruptured left tube. I operated again and she made the second recovery uninterrupted.

Dr. Rose's paper is an excellent discussion of extra-uterine pregnancy. This is a subject that requires an accurate diagnosis and a quick operation. I don't know of any condition that requires an earlier operation than an extra-uterine rupture. I have never been so fortunate to see a case of extra-uterine pregnancy before it ruptured. All the cases I have had were immediately following rupture.

Two weeks ago I saw a case that came in with a history of acute pain coming on shortly after the lady got home from a moving picture show at night, on the right side of the pelvis, without any shock. The symptoms all resembled an extra-uterine except the fact she hadn't missed her period. There had been irregularity before. The symptoms were so much like extra-uterine and examination showed a soft mass on the right side of the pelvis, although the blood count didn't indicate severe hemorrhage. She went on three weeks and was up walking around and very much objected to an operation. After a little persuasion, she decided to have it. In my history and preoperative diagnosis, I stated it looked like an extra-uterine rupture, but the symptoms weren't clear-cut.

On operation, the first thing I saw was free blood in the abdominal cavity with a clot in the right pelvis, and the patient was still bleeding. It was fortunate I operated on her. She has had a rapid recovery.

I agree with the Doctor that these cases should be operated as early as you can make the diagnosis and not wait until subsidence of the shock, because you can do the operation largely under local anesthesia, aided by gas after you get into the peritoneal cavity.

Dr. David Rose, (Goldsboro), closing discussion: Mr. Chairman, it is very interesting to know Dr. Moore's report of a case in North Carolina. According to the statistics, there are only twenty-four in all the literature of America that have been reported so far. I have never been fortunate enough to have one and to get the two city lots.

I think Dr. Lawrence's type of anesthesia is probably preferable in the hands of a man who has had some experience in spinal anesthesia. Ruptured ectopic pregnancy reminds me a great deal of a man using dynamite. When the explosion occurs, something has happened, something terrible has happened. In case of ruptured ectopic pregnancy, particularly in the isthmic portion of the tube, something has certainly happened. It is not difficult to recognize the acuteness of the condition. I think it is very difficult to say whether the patient sometimes has an old pus tube that

has flared up, or whether it is ectopic pregnancy, but where there is a question, I think the chance should be taken and the operation, the exploratory operation performed at the time.

CHAIRMAN JOHNSON: We will now have the report of the Nominating Committee.

DR. BREWER: Your Committee submits the name of Dr. R. A. Ross, of Durham, for next Chairman of the Section.

The nomination was seconded by Dr. T. L. Lee, voted on, and elected unanimously.

CHAIRMAN JOHNSON: I declare the meeting adjourned.

The meeting adjourned at six o'clock.

SECTION ON PUBLIC HEALTH AND EDUCATION

Dr. L. Carlton, Acting Chairman, Winston-Salem

This Section met in the city court room Tuesday, April 16, at 2 p. m. In the absence of the chairman, Dr. W. A. McPhaul, President Kitchin appointed Dr. R. L. Carlton, Winston-Salem, as chairman.

Dr. Carlton called the Section to order, and the following papers were read and discussed.

RURAL SANITATION

By H. E. Miller

Early sanitarians groped in the dark, much as did the "medicine man" of the savages, and other forerunners of medicine with all of the facts of modern science at its command today.

Early sanitarians became very much exercised over the disease menace of trash, odors, sewer gas, etc. Hog pens and damp cellars have been, and by many today who should know better, are even yet pointed out as reeking foci for the spread of disease.

When investigators proved as a scientific fact, however, that such diseases as typhoid fever, and others now commonly termed, "excreta bourne," were contracted only by eating or drinking food or drink contaminated with the actual feces or urine of persons infected, lines of attack became directed to measures of protection of food, milk and water against contamination from the body discharges of infected persons.

Since large cities obtain their food, milk and water supplies from more or less common sources, measures were first applied to these centers. The one item from a single source, most common to all was water. With rare common sense efforts were first directed toward water supply protection, with the stupendous results in typhoid reduction that are familiar to all.

Curiously enough, however, effort was next dissipated, more or less, on efforts for the protection of food supplies in general, with only passing thought of milk sanitation.

As public health began to develop in the South, naturally the established methods were first undertaken. This was well and good so far as public water supplies were concerned, and North Carolina has maintained a leading position in this connection.

The "medicine that cured" in the North and East, however, accomplished improvement but failed by a large margin in the South. It remained for pioneers of Southern public health, the Rankins, Ferrels, and Lumsdens, to brave the courage of their convictions for the lowly sanitary privy devoid of any spectacular grandeurs. These men had to

compete with "swat the fly campaigns" which had their appeal for the delicate minded and those mentally lazy, lacking and cowardly.

Among North Carolina's truly great, and what is more, among the nation's truly great pioneers in public health, history will assign Dr. W. S. Rankin a place "up front" as the man who had imagination, the vision and the "intestinal fortitude" to get the legislature of North Carolina to enact a real workable sanitary privy law. No greater boon to humanity has ever been placed upon the statute books of any State.

By means of comparison to orient our minds on the problem of "Rural Sanitation," let us see what was the situation then as against 1925, after privy sanitation had been applied in municipalities.

			1918			
Total	*Urban*	*Rural*	*Col. Urban*	*Col. Rural*	*W. Urban*	*W. Rural*
23.1	38.2	21.6	57.7	31.6	27.2	18
			1925			
9.8	7.3	10.2	12.1	18.8	4.9	6.8

In 1918 we had the stupendous municipal rate of 38.2 with a colored municipal rate of 57.7 which were practically twice the respective rural rates. In 1925 the condition was reversed. The rate for the State as a whole has been reduced to 7.8 for 1927. With a total of 184 deaths in the State from typhoid in 1928, against a total of 226 for 1927, the 1928 rate when computed should be around 6.0 to 6.25, which is a large drop, especially in view of the low rate already obtaining for 1927. Although separate death rates for municipal and rural are not available for 1928, the case reports show where the bulk of the typhoid fever now occurs.

Out of a total of 1073 typhoid cases reported in 1928, 369 were reported from municipalities. It is significant to observe, however, that 212 of these cases occur in eleven counties, with towns or cities in which are hospitalization centers. By way of starting discussion, counties in which ten or more city cases are recorded are as follows:

Buncombe 10—(Asheville 8)
Edgecombe 12
Forsyth 42—(Winston-Salem 42)
Gaston 12
Guilford 31—(Greensboro 29)
(High Point 2)
Lenoir 33
Mecklenburg 17—(Charlotte 17)
Nash 11—(Rocky Mount 5)
Rowan 16
Wake 13—(Raleigh 7)
Wayne 15—(Goldsboro 9)

As the health officers of each of these counties and cities explain to you the number of these cases that were cases imported to the hospital or otherwise known from complete epidemiological investigations to have originated outside of the cities under which they are recorded, you can see to what extent these are actually rural cases, although according to the rules of reporting they are charged to the town or city from which they are reported.

A cross section survey of Pitt county, which is at least as good as the average shows:

196 homes, 123 of which have driven wells, 90 open dug wells, and 13 no water supply. With respect to excreta disposal, 9 had defective privies of an approved type, 122 open surface privies and the remainder, 65, no privies at all.

These results are believed to be fairly representative of the extent of sanitation in the average rural section except that Pitt county is unusual in respect to driven wells which places it high above the average in water supply protection.

This lack of sanitary measures for the disposal of excreta and the protection of water supplies is reflected in record of cases of typhoid fever reported from Pitt county in 1928, which is 3 cases in the towns and 42 cases in the country.

The trouble mainly lies in the farm water supply and the farm privy. In most cases a properly located sanitary privy would render the water supply relatively harmless, although a focus for infection, with the potentialities of a keg of dynamite.

The answer to this problem is public health education. The farmer can be sold the idea of a sanitary privy. He can be sold the idea of protecting his well or spring. To do this requires health officers with a "sanitary sense," health officers who are willing to get out and get down to and with the people, and sanitary inspectors who can and do preach the gospel of sanitation. In counties now without established health departments, it means the education of the local officials and the people to whole-time health personnel.

If those engaged in local health work expect to succeed in this problem they must train their sights on the basic essentials, leave out the spectacular, the easy, the popular and less productive activities and go after definite worth while objectives and preach the "gospel of sanitation" with the missionary ardor and devotion. We must have a rural sanitation "awakening."

PRACTICAL PHASES OF A MILK CONTROL PLAN

By J. N. Heald

Director of Food Inspection, City Health Department, Winston-Salem

I do not propose to waste any of your time trying to tell you anything about milk itself. It is familiar to you all—its chemical composition and its place in the human dietary.

Rather shall I talk to you on the problem which confronts us health officials in trying to provide you doctors with a milk supply which merits your confidence.

May I, (for the sake of clarity and argument) take the liberty of dividing milk supplies into four general classes.

1. Safe milk supplies
2. Reasonably safe milk supplies
3. Just milk supplies
4. Dangerous milk supplies.

Under the first classification comes that of certified milk pasteurized. Theoretically that would constitute the safest milk supply. Is it a practical proposition? My answer is "no," and I think you will agree with me. Therefore, let's not waste any more time on it. It is too expensive a proposition to play any important part except as an ideal. There are a few cities in the country which have this ideal supply available for your prescription, but it forms a very small portion of the general supply.

Second classification of "reasonably safe milk supplies is headed of course by certified raw milk. As a source of general supply, it is as impractical as the first mentioned. It would be fine for you gentlemen if every community could have some person so philanthropically inclined as to have certified milk as a hobby and make it available regardless of cost. But such is not the case in the average community with which we are concerned.

The next source under our second classification is the so-called Grade A pasteurized milk, and its running mate Grade A raw milk. It is these two grades that I wish to discuss more fully for they are both practical and reasonably safe. In fact, Grade A pasteurized undoubtedly outranks certified raw milk in the factor of safety, if not in the factor of quality.

Our third classification of "just milk supplies" refers to those cities and towns which have no organized or systematic plan of control; which may have some form of a milk ordinance, and possibly may have a milk inspector who may also be the health officer or the meat inspector, or the fire chief, or the chief of police, or the chemist of the water works, or the sewer commissioner, or what not. Nine times out of ten when such a combination as any of the above exists, that city has what must be called "just a milk supply."

Under the fourth classification of "dangerous milk supplies" are those which have no supervision whatsoever; where anyone can peddle milk under any conditions. Their only protection might well be called the Grace of the Goddess of Chance—more modernly referred to as "bull luck." Thank goodness, there are not many such communities left in our country today. However, there are far too many left in our third classification. That city government which feels it cannot afford a full-time trained milk inspector fails to realize its obligation to its babies and future citizens. I could name several other functions of government that could be much better dispensed with than failure to provide the community with a high grade milk supply.

Let us now turn back to a discussion of the essential factors in a practical yet efficient milk control plan for our average Southern city—one with which many of you as local health officers are concerned. What are our main objects?

1. To provide a milk supply that will not spread disease.

2. To provide a milk supply that is pure, normal, and nutritious from a chemical standpoint—free from adulterations.

3. To provide a milk supply that is dependable the year round; that will keep sweet until it is used up; that is pleasing to the taste; in other words, "that is good to the last drop."

Let us discuss No. 1. Can we provide you with a milk supply that will not spread disease? No. We can only approximate this because of the factor of human handling that is ever present. If a sterilized, mechanically handled milk supply was satisfactory to the public, we could probably fill the bill.

From a practical standpoint, the following protective steps can be taken.

1. The cows can be tuberculin tested annually by a registered veterinarian. Reactors can be removed immediately from the herd and killed or quarantined. An infected herd can be retested every 6 months instead of 12 until 3 successive negative tests have been obtained, after which the annual test can be resumed. Milk from such a herd can be considered safe so far as the spread of tuberculosis is concerned.

2. All persons coming in contact with milk in any way can be examined for tuberculosis. They can have feces and urine examinations for typhoid. They can be checked for venereal disease and throat infections.

3. Dairy water supplies can be examined for contamination, and necessary precautions taken to prevent subsequent pollution.

4. Sanitary fly proof privies can be constructed on all dairy farms.

5. The cooperation of dairymen can be secured in reporting immediately the occurrence of any acute infectious disease, and satisfactory isolation can be arranged.

6. Dairymen can be taught to properly care for milk bottles coming from customers' homes that have been quarantined.

7. On top of all these precautions, pasteurization can be required.

8. And finally where necessary, the physician can require boiling of the milk supply as a last protection.

Let us now turn to our second objective—a pure normal milk supply chemically.

1. The laboratory examination of samples collected at random from the various milk supplies will give this information and protection.

Examinations should be made for the per cent of butter fat, total solids, water, foreign sediment, preservatives, and bacterial content.

The average per cent of butter fat and solids should always be available for the doctor's information in order that he may intelligently instruct mothers or nurses as to the proper modification for the baby.

The inspector should impress on the dairyman the great importance of mixing the milk of the herd thoroughly and uniformly each day. A milk supply that runs 3 per cent fat one day and 5 per cent the next cannot be satisfactorily modified to produce a desired feeding day in and day out.

The use of the old time preservatives of soda, foralin, etc., is largely ancient history today. Occasional instances of watering or skimming are found, but their detection is simple and easily stopped.

Finally comes our third objective—a dependable milk supply, appetizing, sweet, drinkable.

To accomplish this objective, the watchword is "sanitation" first, last and always. It begins at the cow and ends at the dinner table when the last drop in the bottle has been consumed.

Let me list the various steps as they occur.

1. Clean cows—brushed, bags washed, teats clean.
2. Clean barns in which to milk these cows—cement floors, well constructed and drained; ample light and ventilation.
3. Sterilized buckets and cans in which to put the clean, fresh milk.
4. Immediate removal of this milk to a clean, well constructed, screened milk house.
5. Prompt cooling by means of ice water or brine to a very low temperature, preferably around 40 degrees.
6. Prompt bottling into clean, sterilized bottles.
7. Continued refrigeration until the time of delivery.
8. Intelligent care of the milk in the home after delivery.

These eight steps (and possibly a few others of minor importance) might well be considered as the basic rungs on the ladder of a successful milk business.

Where pasteurization is practiced, it is of course essential that the pasteurizing plant be properly constructed; that the apparatus used is so designed as to heat every particle of the milk to the required temperature; and that the system of operation is effective and faithfully followed every day in the year.

As a final factor in any satisfactory milk control plan stands the milk ordinance itself. These questions should be asked of it. Is it practical? Is it enforceable? Will it retard or advance the local dairy industry if efficiently enforced? Does it give maximum protection to the public without making the cost prohibitive? Are its provisions in line with recognized dairy sanitation practices, or is it a freak ordinance—the abnormal child of some health officer's too fertile imagination?

Do we have available a milk ordinance that satisfactorily answers all of the above questions? In my opinion, we do. While I hold no brief for it, nor do I consider it a perfect ordinance by any means, still I do believe the Standard Milk Ordinance sponsored by the U. S. Public Health Service and the N. C. State Board of Health is the best, most practical and efficient milk ordinance available today. With an occasional modification to fit certain peculiar local conditions, I believe it can be efficiently enforced with a minimum of disturbance of the dairy industry itself, and a maximum of inexpensive protection to the consuming public. It has been efficiently enforced in Winston-Salem for several years, and both our

dairy industry and our consumption of milk have thrived under it. We stress the points I have outlined to you, and I believe we have a reasonably safe milk supply.

The specifications for its Grade A raw and Grade A pasteurized milk are rigid yet practical. Its bacterial standard of not over 50,000 per c.c. are easily met. Its temperature requirements are sufficiently low to inhibit bacterial growth. Its pasteurization standards are designed to give maximum protection. It also has the invaluable feature of uniformity. As the technic of enforcement becomes standardized, the different grades will have the same meaning and the quality of the milk will be the same in all cities operating under the ordinance. Grade A milk in Greensboro or Wilmington will be the same as that in Charlotte or Mt. Airy. People moving from one city to another can be assured of the same quality of milk in their new location. My chief criticism is not of the ordinance itself, but of its off hand adoption by the smaller cities and towns without adequate personnel and financial support for its enforcement, thereby giving the public a false impression of its grades and a false sense of security.

Of course, if it were simply a matter of sitting at our desks and writing a milk law, we would prefer to give you gentlemen a "certified pasteurized milk" supply, but we cannot do it from a practical standpoint.

In closing, may I urge upon those of you who are not health officers that you take an interest in the milk supply of your community. If it is not to your liking, bring your influence to bear on the proper authorities to make it so regardless of cost. The medical profession is one of the most powerful influences in the world, and if it demands a safe milk supply, believe me the most humble community in our country will get it.

If your community has a milk inspection service that is trying to function efficiently, lend it your invaluable support. Take an interest in its work, and avail yourselves of the information its records afford.

THE VENEREAL MENACE

By W. W. Craven, M.D., Charlotte

One after another of the agencies that have retarded the fuller and more satisfactory development of society have come under the condemnation of the masses, and efforts more or less successful have been aimed at their suppression or eradication. After centuries of uncurbed rampage the rum demon became intolerable and society has taken a stand, rather feeble though it be, against it.

Then came the fight against opium and its derivatives and its path across time is being made much more difficult than it once was. Today an effort is being made to cause a recession of the automobile speed menace, perpetuated by the reckless speed demon loaded with "fire water" or perhaps only with the spirit of the "killer." Finally it is becoming noticeable that public attention is becoming more or less directed towards the so-called social diseases, gonorrhea and syphilis. Today America as never

before is faced with the momentous question of how best to control these two diseases to say nothing of the swath being cut by the bacillus of Ducre. Unless there is a slackening of the inroads made by these diseases on the human economy there will be results far more disastrous in the future to all races than has been the case in the past. The exact origin of these social diseases as to time and place is not definitely known, but it is probable that the people of the early dawn of history were familiar with them. Chapter XV in Chronicles of our Bible refers to an ailment whose symptomatology as recorded is very suggestive of gonorrhea. In the present era with so many means of rapid transportation the matter of limiting prostitution is a greater problem than ever. The isolation and cure of those infected seems to be an ideal well nigh unattainable. In times past when population was not shifting and drifting as it is today there was far less chance for rapid and widespread dissemination of venereal disease. Before the civil war and for many years thereafter, notably in the case of the colored race, there was little change of residence and these diseases were rarely encountered. In Africa among the native blacks we are told by medical missionaries the social diseases were unknown prior to the advent of the white man and his advanced civilization.

Today in proportion to the increased propensity of the colored people to go to the big centers of population in like manner has the venereal menace threatened his ranks. The well known song that the colored man chants, "He rambled, he rambled, he rambled till the butcher man cut him down" is pathetically true in more ways than one. The venereal butcher man lays him low by the tens of thousands annually. On the return of the prodigal son from his travels there is a noteworthy increase in the numbers of darkies applying to the apothecary for medicines purported to cure "strains," "running range," etc., nor is this peculiar state of affairs limited to those of "dusky hue" for there are other prodigal sons of a different color that are prolific sources of trouble. Probably every nation under the sun is infested with this particular breed. Heretofore society has had no way of knowing of the countless number of human derelicts strewn along the highway of licentiousness. The public should know of the thousands of children in the world whose eyes have been forever curtained by the gonococcus and whose minds have been clouded by the treponema palida. Dwarfed and deformed bodies harboring minds of imbeciles are encountered every day in every part of the world resulting no doubt more often than is suspected to this course of the human race.

The public should know of the thousands of unsexed and sterile women made so in toll to the inexorable depredations of the gonococcus, and it should be told that the larger per cent of major gynecology is due to the ravages of this same organism. One of the saddest pictures that the Doctor has ever known is that of the ignorant and trusting bride who marries what she thinks to be her ideal, a man's man, and a ladies' man, one who prides himself on being a regular fellow, and looks forward to a happy

married life and with what is her heritage—*children;* all too soon comes the discharge that knowingly or unknowingly the family physician assures her is a result of marital relations and will soon adjust itself without treatment. Then follows the slight pain in the pelvic region accompanied by a noticeable tenderness. At first it seems that there is little reason for apprehension, so uncomplainingly she travels her road of pain, not knowing the cause of her suffering, believing it to be a woman's portion. In the meantime, the errant husband, light-hearted libertine that he is, goes on his way like the proverbial lion, seeking whom he may destroy. Finally there comes a day when the wife finds herself a bed-ridden invalid and it dawns on her that she is seriously ill. Next comes the trip to the hospital with its attendant dangers and mutilation for something that she is both ignorant of and innocent of. In due time she leaves the hospital, if indeed this is to be her good fortune, unsexed and with her most cherished hope—that of motherhood—gone forever. Surely something should be done to avert this appalling misfortune that is befalling so many of our women day after day. Sympathy on the part of the guilty party will never bring relief or satisfy the demands of justice. The guilty must pay somewhere, sometime. To attempt to give even approximate statistics on the prevalence of gonorrhea and syphilis is manifestly impossible for thousands of these patients never go to physicians and a knowledge of their presence never reaches the collector of statistics. The very nature of these diseases insure their existence being scrupulously safeguarded. Many of the sufferers never confide their secret to anyone, simply buying patented medicines said to cure such disease as they think they have. It is safe to say that not less than 60 per cent of males at one time or another have had gonorrhea or syphilis, or perhaps both simultaneously. As to their prevalence among females it is far more difficult to arrive at a conclusion. Some fifteen years ago, Dr. Keyes, the urologist, thought that there were perhaps sixteen cases among males to each found among the opposite sex. Were he living today no doubt he would revise his figures. Owing to inborn modesty the female is slow to consult a physician, and when she does he is often left in doubt as to the presence or absence of the gonococcus. Numerous mistakes in diagnosis are made in this realm of medical science. Fortunately nature unaided often brings these cases to a safe conclusion. It is a curious fact states Dr. Keyes that gonorrhea is either much more mild or much more severe in the female than the male. Many females are unaware that anything is wrong while others are quickly overwhelmed by salpingitis, pelvic abscess, and at times complicating peritonitis. In the male one encounters an inflammatory condition of the prostate gland in practically all cases where the post-urethea has been invaded. Here it is frequently most intractable and is a source of many grave lesions within the gland itself, and here too we find the port of entry of systemic gonorrhea. When there is a cessation of discharge from the external meatus the patient experiences a feeling of false security not being conscious of the

fact that the deep urethra in very many instances is still an excreting surface that is unloading pus well laden with the infectious organisms. This very condition constitutes the greatest menace on the part of the male. He ignorantly in most cases transmits the infection to the wife or prostitute. He is misled through the circumstance of the pus being prevented from appearing at the external meatus by the action of the compressor urethra or "cut off" muscle. The last count in the indictment against gonorrhea is systemic gonorrhea or gonorrheal rheumatism. A condition comparatively rare and fairly controllable. This condition is rather grave in that at times it is responsible for iritis and endocarditis. About one-half of one per cent of gonorrheal cases are supposed to have systemic gonorrhea. Its course is one of slow progress to a cure that is usually permanent. As to a man or woman being permanently and hopelessly disabled by the social diseases, authorities differ widely. There are some of large experience who believe or at least profess to believe that no one is ever thoroughly cured of gonorrhea. Any statistics at all and in any sphere of human endeavor where the collector of same is both judge and jury should be carefully considered before acceptance. No man's opinion is infallible and no one has a monopoly on wisdom. Certainly there is a reasonable expectation of cure in 75 per cent of all cases that take a thorough course of treatment.

We vainly search for a remedy for the present deplorable status of the social disease menace. We ask ourselves the question whether or not legal measures will be effacacious. This is extremely doubtful. A standardized examination of the applicant for marriage made in a correct and impartial manner by a board appointed by the state medical authorities would be a step in advance of the present slip shod method where the family physician is the arbiter as to eligibility for marriage. The question of marital unfaithfulness and clandestine living is well nigh unsurmountable and is obviously beyond the pale of the law. Women must learn, if indeed they do not know, that man and woman hold entirely different positions as to infractions of moral law both as to physical consequences to themselves and of public opinion. No such appalling misfortune awaits the male who has contracted gonorrhea as that which threatens the life and character of the female. The guilty man belongs to that class in the majority, but not so in woman's case. In the eyes of society man is hurt little while under the same count the woman is rated an outcast, and often has to suffer in addition to social ostracism ravages of disease that are irreparable. Thus to some extent we see that the wages of sin are less inexorable in the case of the male. This unfairness is apparent to all, yet it must be faced by society in general. Women are often innocently and accidentally infected by using unclean syringe nozzles, unclean linen, etc. All physicians now-a-days encounter vulvitis in young females due to criminal carelessness on the part of those responsible for their care. It is highly probable that the number of venereal cases is on the increase and that the

social diseases are penetrating strata of society hitherto immune. It is becoming noticeable that colored people are no longer prolific. The majority of unions being productive of no increase in population. The gynecologist knows better than anyone else of the enormous number of cases of uterine adnexa removed from the women of both races on account of the inroads of venereal diseases. Females generally and not a few males know practically nothing of the nature of syphilis and gonorrhea.

In the case of the young female many times when the moral issue involved is not sufficient to restrain her from a plunge into the realm of venery the fear of physical suffering will dissuade her. Every growing girl and young woman should be informed in some way as to the prevalence and the nature of gonorrheal and syphilitic infection. The young male is better informed on such matters than is the female.

Every living thing seeks to evade anything that will entail bodily suffering. If the public could follow the doctor through the wards of suffering ever present in all hospitals, and after a manner this is possible through the press, and there see the countless victims doomed to the operating table through the agency of venereal disease, it would take this problem of the social disease far more seriously than it does under present conditions. Society in general would consider well before taking any step that would lead into this road at the end of which is only broken bodies, heartaches and blighted lives. Numerous indeed are the sacrifices made each year at the shrine of Venus through ignorance as well as through wilful waywardness. An improvement in the moral tone of society offers the best solution of the venereal problem. Our ministers and welfare workers might be more effective if they spoke more plainly, using terms that could not be misunderstood. The proper dissemination of literature bearing on this subject would undoubtedly have a far reaching effect. Punishment for the guilty parties would be effacacious could they always be apprehended. Small cash fines and suspended sentences do little good towards restraining the hygienic law breaker as will those who break other laws. Punishment regardless of the offense aimed at are practically worthless unless they hurt. The prospect of real punishment would make the infectious libertine consider well his step before advancing further along his road of conquest. Our present laws regarding venereal disease are broken with the same impunity and abandon that traffic laws are broken.

As to individual prevention there is no infallible method. A better method of dealing with prostitutes would be a big advance. Putting them to some kind of hard work and seeing that they did it would help some. The idea of work is odious to this class of our population and only an iron hand can ever make them do it.

Bringing venereal disease and sexual matters into the light of day and into public understanding seems plausible. The prostitute like the poor we have with us always still it is to be hoped that in the future it will

be in ever decreasing rather than increasing numbers. Whether or not the social diseases are undermining the physical and moral standing of this nation is a question worth deliberating.

Will Uncle Sam, today the mighty of earth, fall as did Sampson of old, to the lusts of the flesh? The question is a reasonable one.

(NOTE: The local reporter who was to report this section became ill and could not be present. Several of the essayist did not have prepared papers and talked extemporaneously. It is regreted that these with all discussions cannot appear in the program for reasons mentioned above.—L. B. MCBRAYER, *Secretary*.)

SECTION ON CHEMISTRY, MATERIA MEDICA AND THERAPEUTICS

Dr. J. F. Nash, St. Pauls, *Chairman*

WEDNESDAY AFTERNOON SESSION

APRIL 17, 1929

The Section on Chemistry, Materia Medica and Therapeutics of the Medical Society of the State of North Carolina was called to order in the Florentine Room of the King Cotton Hotel, Greensboro, North Carolina, at 2:20 o'clock, by the Chairman, Dr. J. F. Nash, of St. Pauls.

INTRAVENOUS THERAPY OF BICHLORIDE OF MERCURY IN ACUTE INFECTIONS (Case Report)

By George C. Chiles, M.D., Durham

History of Mercurial Injections. Intravenous administration of mercurials was first proposed by Bacelli in 1893 in the treatment of syphilis, but the irritating properties of bichloride and other inorganic salts prevented their extensive use. With the development of various inorganic and organic compounds many of which are still in the experimental stage, the method is again coming into use. During the last few years we have read much concerning the use of mercurial salts of which mercurochrome has received the most popularity.

During my hospital training I had the privilege of observing several cases of cellulitis and septicemia which were treated successfully with injections of bichloride of mercury, and I feel that it could be employed to a wider extent with limitations of its use in mind of which will be considered in this paper. Our clinical information is derived largely from the fatal cases of mercurial poisoning.

Pathological Effects Produced by Mercury Poisoning. These cases seem to be patients that have had either very large or continued doses of mercury.

Acute Poisoning. Nausea followed by vomiting of a first mucus then bile and finally blood. Severe purging with "rice water" stools which later contain mucus and blood. The amount of urine is at first increased then diminished; a dark color and high specific gravity, albumin, casts, blood, and sometimes sugar sooner or later appear. In prolonged cases salivation, stomatitis, cutaneous eruptions and especially petechiae occur.

Effect on Circulation. In experimental mercurial intoxication in animals, ecchymoses especially of the left ventricle have been observed.

Blood Changes. Mercury even in small doses increases the water content of the blood and lessens the alkalinity producing acid intoxication. (MacNider). The increased hydrogen ion concentration is due to lactic acid. As to the erythrocytes, experiments have cleared up conflicting clinical observations by showing that they increase after small doses and decrease after large doses.

Respiratory System. The toxic effect is depression but as a rule mercurials have little or no direct influence on the respiratory center.

Nervous System. Toxic doses produce extreme nervousness with tremors. In the central nervous system there is found degeneration of the cells in the cerebral cortex and anterior horns of the cord.

Pancreas. In a few cases of poisoning, pancreatitis has been found post mortem.

Liver. The action of mercury on the liver is extremely obscure. Experiments on animals show lessened secretion.

Kidneys. Nephritis produced by mercury is primarily tubular in character; glomerulo nephritis of the exudative (hemorrhagic) variety is frequent and practically always accompanies severe tubular nephritis. Calcification of the degenerated tubular cells has been found within forty-eight hours after administration of mercury and always occurs in severe mercury nephritis, irrespective of the salt administered or the route of injection.

All salts of mercury produce a marked temporary increase in the flow of urine affecting especially the water content; in toxic doses it is followed by suppression, anuria and uremia. The diuresis was formerly attributed to stimulation of the renal cells, but from more recent studies it would seem not to be due to any direct effect on the kidneys, but rather to an increase in the water content of the blood. This hydremia arises directly from the action of the drug on the cells of the small intestine by which absorption of water is prevented, an excess of fluid thus passes into and accumulates in the large intestines. The mercury, then being precipitated as sulfide, no longer hinders absorption. The fluid is taken up rapidly and the hydremia results. The excess of water is not bound to the blood colloids and therefore tends to escape by the kidneys.

Toxicity and Dosage. The toxic fatal dose of mercuric chloride is seven (7) miligrams or one-ninth (1/9) grain or 74 per cent of mercury or 5.2 miligrams or one-twelfth (1/12) grain of pure mercury, per kilogram of body weight.

In general terms it may be stated that the toxicity of mercurial salts is directly proportionate to the amount of mercury contained. The inorganic salts as represented by the bichloride of mercury are no more toxic than the numerous organic combinations that are commonly employed. The differences in the molecular structure of the mercury compounds tested by Schamberg, Kohner and Raiziss were found to be slight

in relation to their toxicity. They also tested the toxicity of mercurials on white rats and found that by slow injections the highest tolerated dose of mercuric chloride was 3-4 mgm. (three to four miligrams), and by rapid injection 2-4 mgm. (two to four miligrams).

The fatal intravenous dose in dogs was 3 mgm. (three miligrams) per kilogram (Pittenger). The mercurialized serum, prepared by treating normal serum with bichloride of mercury and allowing the precipitate to dissolve in part, kills in the same dosage as the bichloride.

Mercury bichloride may be given in dose of 0.6 to 2 c.c. of a one per cent solution (6 to 20 miligrams) increasing the dosage 0.1 c.c. at each infection but not exceeding a dose of 15 c.c. (150 miligrams) or (2.5 grains).

Intravenously 2 mgm. per kilogram (1/30 grain) is commonly well tolerated.

The minimum lethal dose of bichloride for man, however, cannot be stated with precision. Death has been reported from 2.5 grains; on the other hand recovery has been recorded after ingestion of from 180-375 grains with treatment.

The dosage I have used and observed was from grains 1/6 to 1/4 at 12 to 48 hour intervals for 4 or 5 days, depending upon the condition of the kidneys, age and weight of the patient, and the severity of infection. The preparations used are hypodermic tablets or ampules containing mercuric bichloride in sterile distilled water.*

Precautions and Information Necessary. There are certain precautions and information that are necessary in the intravenous administration of bichloride, namely; (1) Nephritis or amount of kidney impairment present. The presence of a trace of albumin alone is not necessarily a contraindication; (2) If the patient has been taking any iodide, no mercurial salt should be prescribed as mercuric iodide will be formed; (3) Mercury is not tolerated well by patients who are suffering from or who have recovered from dysentery, severe diarrhea, malaria fever, and tuberculosis. If the drug is administered to these patients, great care should be used.

Technique of Administration. The procedure is under aseptic conditions. The needle is introduced into the vein (either median or superficial carpal) and about 0.5 c.c. of blood is withdrawn into the solution in the syringe. This forms albuminate of mercury which is non-corrosive and does not form phlebitis. The tourniquet is released and the solution is slowly injected into the circulation. No burning is complained of if the solution is going into the vein. The needle is withdrawn and slight pressure maintained; a sterile dressing is then applied.

If the mercuric chloride is dissolved in normal saline solution instead of distilled water any possibility of hemolysis of red cells is said to be

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*These observations were made on patients under the care of Doctors Dalton, Rollings, Urbach, Lewis and Monroe, Richmond, Virginia, to whom I wish to express my thanks for permission to present this material.

prevented. I have never seen sloughing at the site of injection, but am informed that should this occur, a small amount of 0.5 per cent novocaine injected at this area and the application of warm wet dressing are of value.

Conclusions. A study of the beneficial and dangerous effects of the intravenous use of bichloride of mercury leads to the conclusion that this drug can be advantageously used in carefully selected patients suffering from generalized infections.

CASE REPORT**

Registration No. 142940 D. P. white girl aged five (5) years. Admitted to the hospital November 27, 1926, discharged December 24, 1926.

Complaint: Multiple pains in the legs and neck. *Present illness:* Six weeks prior to admission, when apparently recovering from diphtheria the child complained of multiple pains in the legs and neck. At intervals since she has had chills and a fever up to 105° F. *Past History:* Unessential except for pyelitis at the age of two (2) years and for frequent attacks of tonsilitis and septic sore throat.

Physical Examination: The essential features were fretfulness, malnutrition, anemia, pain in the joints and muscles especially when moved. The pulse was irregular varying from 130 to 160 and the temperature 99° up to 105° F.

Laboratory Reports: X-ray of the pelvis and hips: negative.

Urinalysis: There were daily complete tests made from 11-27-26 to 12-12-26, thereafter at intervals of from 2-3 days.

Albumin: Varied from slight trace to trace 11-28-26 to 12-1-26; thereafter there was a trace at intervals of 4-5 days.

Pus: 6 to 22 cells in clumps in each high power field. The appearance of pus in quantities was almost invariably accompanied by either a chill or a rise in temperature.

Blood: Appeared once 11-28-26 in the urine.

Epithelia cells: Varied in small amounts at irregular intervals until 11-12-26; none thereafter.

Acetone and Acetic Acid: Absent throughout the course of infection.

Casts: On 11-28-26 a few epithelial casts were found and on 12-4-26 an occasional hyaline cast was noted; none were seen at other times.

Kidney Function: 50%.

Urine Culture: The urine (12-13-26) from the bladder and both ureters (obtained cystoscopically) was sterile.

Blood studies: 12-1-26 Blood culture: sterile.
12-8-26 No malaria parasites found.
12-14-26 Widal: negative.
12-18-26 Blood culture: Streptococcus hemolyticus present.

Blood Counts: 11-29-26 WBC, 18,600, 80% polyneuclear.
12-6-26 RBC, 2,010,000; hemoglobin (newcomer) 33%.
12-17-26 After 3 transfusions RBC 3,150,000; hemoglobin 54%.

Blood urea: 11-27-26 and 12-13-26 10 mgm. per 100cc of blood.

Course and treatment: The patient was admitted with diagnosis of septicemia and 6 injections of mercuric bichloride were administered during the first 8 days. The first injection contained grains of 1-8 of bichloride dissolved in 1cc of sterile distilled water and the other seven contained grains 1-4 in 1cc of water. In the first 8 days, during which 6 injections of bichloride were given, the temperature fluctuated between 98 8-10 F. and 105° F. which gradually fell to an average of 103 degrees F. from the first day to normal on the 8th day. When the drug was discontinued on the 9th day the temperature rose again to an average of 102 degrees F. fluctuat-

**Report of this case is by the courtesy of Doctors Howard Urbach and Charles Robbins of Stuart Circle Hospital, Richmond, Virginia.

ing between 97 degrees F. and 104 2-10 degrees F. and gradually fell to normal on the 15th day. On the 11th, 14th, and 21st day after admission three transfusions of whole blood were given by the Unger method. On the belief that an intussuseption or mesenteric thrombosis might be present, an exploratory operation was performed on the 17th day. A thrombus in one of the superficial veins of the left rectus muscle was the only pathological change found. This was removed and culture positive for streptococcus hemolyticus. The temperture for 4 days after he operation fluctuated between 97 6-10 degrees F. and 104.8 degrees F. then became normal (21st day after admsision) and remained normal until the patient was discharged on the 28th day.

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SOME OBSERVATIONS ON AND TREATMENT OF ENDEMIC GOITRE IN NORTH CAROLINA

By Louise M. Ingersoll, M.D., Asheville

In presenting the topic chosen at this time there are several factors to be considered as possible sources of error in making any assertions or drawing conclusions:

1. Some difference of opinion among authorities regarding what constitutes endemic goitre; that is there is no generally accepted classification of goitre.

2. No absolute standard of what size a gland must reach to be classified as goitre.

3. Lack of uniform methods of examination.

4. So few reports or surveys on the subject have been made in North Carolina.

1. After considering various classifications as those of (1) Jackson, Marine, Levine, Plummer, Else, and others it seems safe to say that endemic goitre includes:

(a) Simple hyperplasia which is a physiological response to some unusual demand upon the thyroid gland. This type may show some symptoms of hyperthyroidism and

(b) The colloid goitre or resting stage in which there may be an equilibrium of supply and demand or a mild hyperthyroidism, myxedema or cretinism.

2. According to Dr. Allen Graham,[2] pathologist at the Cleveland Clinic, the average size of a normal thyroid gland is from twenty to thirty grams in the Cleveland district while authorities over the country state that it varies from fifteen to forty grams. Even the largest figure, forty grams—one and one-half ounces—of solid meat spread out into two lobes and an isthmus make very little to be palpated especially in the thick neck.

After starting the examinations which stimulated the writing of this paper we felt that too many large thyroids were being found, so wrote to one of Crile's assistants who was known personally to the writer, asking what they considered a normal thyroid. The reply came [2]"The normal thyroid gland is barely palpable," in the determination of which the personal factor must enter very largely. Else[1] regards a small palpable thyroid normal when the lower pole is not blunt, a blunt lower pole means either goitre present at the time of examination, or remains of a previous goitre.

3. The only two standardized methods of examination found among the various papers read and communications received were those of Else[1] and Lahey.[3] The important factor in all cases seems to be that of having a patient swallow while the gland is being palpated.

4. The only North Carolina report available was that of the public[4] health reports showing the incidence of goitre among the drafted and enlisted men during the war.

ETIOLOGY

Definite statements regarding etiology of endemic goitre are not so easily found as are those regarding incidence from which theories of etiology are deduced. Even here though, there is sometimes found conflicting evidence as in a section in the Philippine Islands and a very high percentage of goitre in the Pacific Northwest. Chatin[5] in 1850 advanced the theory that iodine deficiency was the cause of goitre. Kimball[6] says: "Endemic goitre is a deficiency disease. The enlargement of the thyroid which is termed goitre is a compensatory hypertrophy due immediately to iodine deficiency." Jackson[1] states "In goitrous belts the colloid goitre is due to iodine deficiency plus excessive demand on the thyroid by muscles, and the osseous tisues, and especially by the reproductive organs during puberty." Marine[7] says that "deficiency of iodine may result from

1. Factors that increase demand
   - (a) Puberty
   - (b) Pregnancy and lactation
   - (c) Menopause
   - (d) Infections and intoxications
   - (e) Injuries to the adrenals (see Crile's fascinating monograph in [8]The relation of the thyroid to the adrenals
   - (f) Following diets composed largely of fats or proteins.

2. Factors which interfere with absorption or utilization of the normal intake, possibly certain intestinal flora and fauna may divert the supply.
3. Factors affecting the amount of iodine in food and water."

Jones[9] of Atlanta cannot associate goitre with drinking water as the etiologic factor else why only one in the family all drinking the same water. Plummer[6] in discussing Kimball's paper remarks, "I don't think iodine is the only factor in the etiology of goitrous conditions. I say I don't understand them at all but at various times have tried to point out the physiological relations present." McCarrison[10] claims the active role of infection as the cause of endemic goitre. He reports a school at Sanawar where for ten years 66 to 80 per cent of the children became goitrous. He changed the water supply to that from Kasauli making no change in the diet and in one year's time he found only 2.2 per cent positive. No more than in non-endemic areas. The new water supply was pure, the old grossly contaminated. He found both water supplies were poor in iodine, the old containing appreciably more than the new. Cantero[11] from the Mayo Foundation says, "Since the work of Farrant and McCarrison there has been no doubt that a contagion vivum plays an important part in diseases of the thyroid gland." Houda,[12] of Tacoma, Washington, advances the proposition that "The genetic factor of goitre is an infection of the thyroid gland and that degeneration changes involving the many sided thyroid pathologies are all consequential and directly connected with these infective agents."

INCIDENCE

Locality: There seems to be as Kimball[6] states regarding Michigan, an almost universal agreement that, "the incidence of goitre is inversely proportional to the iodine content of the water supply." This he shows plainly in his survey of the various counties in Michigan. Actual chemical analysis of water in certain sections of the lower Mississippi valley has shown an iodine content of from ten thousand to eighteen thousand times the amount contained in Lake Superior districts. Conversely no endemic goitre is found in the same districts of the lower Mississippi valley while 64 per cent of the school children in the Lake Superior region were goitrous in 1924. In Massachusetts it was found that goitre increased in almost direct proportion as the distance from the sea.

Sex: It is generally conceded that the proportion of goitres is considerably larger in females than in males. Jackson[1] gives five women to one man. Among school children the percentages are nearer, as shown by Kimball's[7] figures, one boy to two to three girls. Kerr,[13] of California, states that "In centers of high endemicity the ratio of males to females approaches unity." Beatty and Wallace[14] found in Utah among the Indians more males than females are affected, but of the white population 38.2 per cent males and 61 per cent females were positive.

Heredity: Kimball[6] replies to the question regarding heredity, "we do not see in our endemic goitre district anything that could be called hereditary goitre or conditions inherited from previous goitre. In older and more severe endemic districts, as Switzerland and the Himalayas, are deaf-mutism, cretinoid states and cretinism due directly or indirectly to endemic goitre." Yet Crile[26] states that endemic goitre in the next generation may be prevented by feeding iodine to pregnant women.

MORBIDITY OF ENDEMIC GOITRE

Aside from pressure symptoms and disfigurement the incidence of toxic goitre undoubtedly bears direct relation to that of endemic goitre. Figures of the War Department[13] of the United States Army show that exophthalmic goitre is most prevalent in areas of greatest endemicity. McLendon[15] says that the incidence of exophthalmic goitre is proportional throughout the United States to the incidence of endemic goitre. There is not infrequently seen in endemic goitre regions a state of mild hyperthyroidism, especially in school girls who, while not mentally deficient, are not up to normal.

INCIDENCE IN NORTH CAROLINA

The public health reports[4] referred to above showed among the drafted and enlisted men during the war 1.81 per thousand having goitre as against 26.91 in Idaho—the highest incidence—and 0.25 in Florida—lowest incidence. Olesen places North Carolina in the shaded area in his graphis chart, not black, but gray. In reply to a questionnaire sent to some thirty or more surgeons throughout and near the state, but fifteen responded and from them the following statistics have been computed. The map shows the distribution in counties or districts of the 1096 cases reported. A very definite increase in the mountains and Piedmont district over the eastern part of the state, though the districts showing greatest number are not those of largest population. Dr. Marjorie Lord and the writer have recently made health examinations of 724 school girls for the local Y. W. C. A. The majority of these were between the ages of 12 and 19 years. 9.5 per cent were found to have goitres, not large in most cases, but according to the standard suggested above, definitely plus. Dr. Lord in 150 high school girls found 7.3 per cent positive. Among the 771 adult women, that is from 19 years upward, examined by me, 13 per cent were found to have enlarged thyroids and 30 per cent further, slightly enlarged. No attempt is made to explain these figures. They were indeed a decided surprise to the writer, who expected to find more among the school girls than among the adults. The only figures obtained for the percentage of goitre among school children in non-endemic areas are those quoted above by McCarrison[10]—2.2 per cent. Girls alone would undoubtedly show a considerably larger proportion. In Woman's Clinic conducted by me recently, the first 100 cards alphabetically filed were reviewed and the records showed 20 with enlarged thyroid.

PATHOLOGY

The pathology of endemic goitre may be simply stated as follows: a greater demand by the body for iodine supply as made by pregnancy, infection, puberty, menopause, and nervous strain causes hyperplasia, usually associated with increase in the colloid, (iodine-carrying element). This, if excessive, causes pressure, thus preventing the normal functioning of the cells but continuing as a stimulant to over-growth. One of two things happens following hyperplasia:

(a) If iodine deficiency is not met the process goes on to cellular degeneration and atrophy, or (b) if met the gland returns to the resting or colloidal stage in which it may function normally. This cycle of changes may take place many times resulting in a very large gland.

TREATMENT

Preparations of thyroid glands were used by the Chinese four thousand years ago in the treatment of goitre.[5] Seaweed and burnt sponges were used by Roger de Palermo in 1180. Coindet[28] painted goitre with tincture of iodine in 1820. The treatment of endemic goitre is almost wholly preventive. Crile[16] says, "The possibility of prevention of goitre has been firmly established by the work of Marine and his collaborators. It has been abundantly proved that by administration of iodine throughout the period of adolescence and during pregnancy thyroid disease may be prevented in this generation and the next, and in this statement malignant tumors are included since they develop in foetal adenomata." The work of Kimball and Marine[18] at Akron, Ohio, that of Kimball[6] in Michigan, the public health measures in Montana,[19] in Cincinnati,[20] in Switzerland,[28] Italy and other foreign countries seem to prove beyond a doubt that whatever may be the relation of iodine deficiency to the etiology of endemic goitre it can be prevented by giving iodine in small quantities in some form. Charles Mayo[23] says "Iodine is almost an absolute preventive of goitre, that has been proved beyond all question. Given in table salt it is a preventive for goitre." There has been some discussion as to the wisdom of giving iodine to adults with any form of goitre. Harstock[23] found definite evidence of hyperthyroidism precipitated in many cases at the Cleveland Clinic by the general use of iodized salt, and this view is still maintained there[2] in spite of Kimball's[6] scholarly defense of the safety of iodized salt used generally as a prophylactic in endemic regions. Kimball says "It seem to be universally accepted now that there is no possibility of producing disease in children by the continuous use of iodine in sufficient amount to prevent goitre," and further, "that none of the statements that iodine in such amounts induces hyperthyroidism in adults with goitre are based on sufficient scientific data to be of much value." Plummer[29] states that nearly 50 per cent of the rare cases of hyperthyroidism associated with adenomata that have come under his

observation before 20 years of life have followed the administration of iodine. Kimball[28] induced hyperthyroidism in susceptible patients by excess of iodine.

The method employed by Kimball and Marine after various methods was the administration to school children of .01 grams of iodo-starin daily for a period of two weeks twice yearly, or as advocated by Phillips[2] .01 grams weekly through the year. This seems a wiser method as known quantities are given and may be administered only to those needing iodine while in the use of iodized salt an unknown quantity is given and the father, for instance, who generally uses the most salt in the family, may get more iodine than is good for him, while the child who needs it receives less than he should have.

There was brought to our notice while reading, the possibility that in chlorinization of the water so freely done everywhere the chlorine might displace the iodine and thus make the water lacking in preventive qualities. The Chlorine Institute in New York replied to queries regarding this, "J. W. Ellis[27] says that the chlorine used would have a tendency to decompose the sodium iodine introduced into the water and liberate iodine, while this element would not lose its combination with organic matter, or its therapeutic value. Crile, in his classic volume, "The Thyroid Gland," asserts that the peculiar function of the thyroid gland appears to be the splitting up of the iodine containing molecules of any compound which enters the organism, and the conversion of iodine into the specific thyroid product, thyroxin."

Kimball says the thyroid will take up iodine from the most stable compound, i.e., mercuric iodine. Therefore, it matters not in what combination the iodine is present in water. Kimball[28] concludes from Von Fellenberg's experiment on himself that "the body uses up or excretes a definite amount of iodine regardless of intake; that the average size young adult with normal metabolism on a minimal amount of physical exertion, all factors reduced to a minimum still excretes .0143 mg. daily. Therefore we might assume an intake of .03 mgs. sufficient for balance. The colloid goitre should be treated surgically if it presents sufficient pressure symptoms or causes enough deformity to bring about self-consciousness. In many instances endemic goitre has been cured, as well as prevented, by giving iodine to adolescents.[28] Since one in four adenomata become toxic before fifty years of age, according to Jackson[1] and Levine, excision would seem a safer way of treatment here. Hypothyroidism, or functional deficiency—so frequent in endemic areas—found in adults may be controlled by supervised administration of iodine, thyroxine or thyroid extract. In children sometimes iodine will control the situation, sometimes thyroid extract or thyroxin is indicated.

CONCLUSIONS

1. Endemic goitre can and should be prevented by the proper use of iodine.

2. There is apparently a mild endemicity in western North Carolina.
3. Further surveys and investigations should be made concerning this.
4. Steps should be taken to control it through the medical profession.

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DISCUSSION

Dr. A. G. Brenizer, (Charlotte): I had the opportunity of writing to Dr. Ingersoll, and I want to congratulate her on her paper again. It is a most excellent paper. There has been practically nothing done in North Carolina to prove the endemnicity or not of simple goitre. If you remark on this paper, you will see that she has embraced all of the work that has been done of importance, and that she has done some investigations herself, and she has sought to find out the prevalence of goitre in the West. Another impressive thing about her paper is the beautiful English in which it was written and how well it was delivered.

Now as to the thyroid gland and being able to palpate the gland, I think the normal thyroid gland, of its consistency and size, would likely not allow palpation. I think any thyroid gland that can be at all readily palpated so that you are aware of the presence, either by pushing the trachea over to one side, and slightly out from the sterno-mastoid, one side or the other, and that you are sure that you are palpating rather hard elastic lobes, then your enlargement of your thyroid gland is real and when you are not certain at all that you are palpating the gland, the gland is likely not enlarged. That is vague of course. It depends a good deal on the one palpating and the experience of the person doing it.

As to the prevalence of goitre in North Carolina, of course we have no such concentrated areas of endemnicity as you find in the West, in the neighborhood of Cleveland, and so on, and likely the goitre being more thinned out in certain areas, the prevalency of it in the female over the male is much greater, because there is another factor that comes in with the female. Now my experience has been that goitre occurs in North Carolina in a ratio of something like ten to one in the female, and as I say, in these concentrated areas, where the goitre is certainly markedly endemic, there the prevalence in the male probably rises.

I have always been firmly of this belief, (and I believe that in the statistics of now something like about seven thousand cases, that I can prove it), I think the thyroid gland enlarges not only from a shortage in iodine, but just in the female who is slow in development or who has a cystic ovary, who has a retroflection with interference in blood supply, or something that speaks for a hypo-ovaria. So many of these cases have had ovarian cysts, the ovaries have been tampered with in some way, sometimes removed, and just in those cases too have an enlarged thyroid gland. They pause for a while with this thyroid gland and then rather suddenly break into an exophthalmic goitre.

Considering these cases, as to the use of surgery in the pelvis, I think any pelvic surgery should be laid very carefully, certainly not be treated as bulk surgery, and certainly not bring about any further reduction of ovarian secretion. It should be a restorative surgery, because when you reduce the ovary, you are going to place that patient liable to develop some symptoms from the thyroid gland.

The giving of iodine—unfortunately I have seen a great many young girls with exophthalmic goitre who should not have had it. They had enlarged thyroid glands sometimes quite meaty and bulky, not merely through the physician, but in their efforts to reduce the mass, they would push iodine to considerable extremes, and in doing that they would go into exophthalmic goitre. I have seen that quite often, so that I am sure that that comes about. Of course the old colloidal included adenomata, and adenomata causes the symptoms in enlarged colloidal goitres, but the girl in her effort to get her neck flat will probably not follow the directions of the doctor, and wanting her neck to get flat in a hurry will push iodine. I have seen cases that have taken iodine right straight along for

eighteen months, and I have seen them end just there, with marked hyperthyroidism.

We are not dealing of course in this paper with exophthalmic goitre or adenomata, or the bulky colloidal goitres, but we are dealing here with simple goitre. I guess the pathological picture of simple goitre is a mild hypertrophy and hyperplasia with an increase in watery colloid, and most of those cases, as the author has indicated, will do well under very small doses of iodine, and I think they should be very small. Even in exophthalmic goitre they should be very small. It has been proven later—and we are trying it and finding it is true—that exophthalmic goitre cases yield just about as well on one drop three times a day as they did on the ten drops. So the amount of iodine is not to be very great, and also as Dr. Ingersoll has indicated, there should be sufficient time between the giving of iodine. It should be broken up in very small doses, and given occasionally during the year to satisfy the iodine demand.

The question of infection, not only in simple goitre, prompting it and if not relieved, it makes the treating very difficult and much against the stream. This also applies to exophthalmic goitre. Sometimes an exophthalmic goitre is removed, a sufficient amount, almost all of it, and sometimes symptoms recur, or the case is not quite as satisfactory as it should be. The focus of infection is later removed with the tooth or tonsil or cervix or what not, or a colitis, and the case promptly gets well.

So I think there are several factors both in simple goitre and in exophthalmic goitre that are very important. The question of the woman with a lowered ovarian secretion, the lack of iodine, and the infectious process —these three factors should be looked into in the treatment of any simple goitre, and that treatment should always be carried on under the direction of a physician, with an original check-up of the metabolic rate, and frequent check in metabolic rates. Of course from an economical standpoint that is not always practicable, but be sure that too much iodine is not given and that the patient is well steered and guided.

From the disasters that I have seen, I would certainly not want iodine given out by the grocery store or scattered around through the city water. Of course it is a well known thing that lots of non-toxic adenomata are stirred up markedly on a minimum amount of iodine. It is a tendency of everybody, the man who has it or the physician, to say, "Here is a goitre, an enlargement of the neck. We will try a little iodine." Well, trying a little iodine in adenomata is sometimes absolutely disastrous.

From Dr. Ingersoll's town we had a young girl about eighteen years old with a small adenomata, an insignificant thing scarcely to be seen, and she was put on a very small amount of iodine, and within ten days' time her pulse rate had climbed to 160, metabolism was about 70 which is very high. There was no preparation at all to bring the girl down for operation, and so she took an operation under those conditions and immediately on the removing of this small adenomata, her pulse came down to normal, the girl gained weight, and was again stabilized. So as

to the diagnosis of the gland, any lumpy gland, however small the adenomata might be, be cautious in the giving of iodine, because you will lead that person into a disaster, and then certainly the pushing of iodine heavily to avoid exophthalmic goitre. I have enjoyed Dr. Ingersoll's paper and am glad to have had this privilege of hearing her.

Chairman Nash: Is there any further discussion? I know we have all enjoyed the paper and Dr. Brenizer's discussion.

Dr. L. M. Ingersoll, (Asheville), closing discussion: Dr. Brenizer has added very much and said many things worth while. In his saying that he thought that any goitre which is palpable is abnormal, I would like to read just a line which I received from Dr. Kimball, who I suppose has done more work in endemic goitre than any other man in the country. I wrote to him about the number I was finding, and the standard I was using. He says:

"From my experience I think you are grading the thyroids a little too close. A normal thyroid if fairly firm can easily be felt in a thin neck, so I have learned to give them the benefit of the doubt and unless they are definitely enlarged, I call them normal."

PNEUMONIA THERAPY—GENERAL MANAGEMENT

By Newton G. Wilson, M.D., Madison

In the treatment of pneumonia it is well to remember at the outset that it is a self limited disease. Osler says, "pneumonia is a self limited disease which can neither be aborted nor cut short by any known means at our command. Even under the most unfavorable circumstances it may terminate abruptly and naturally. The young practitioner should bear in mind that patients are more often damaged than helped by the promiscuous drugging which is still only too prevalent."

The general management of a case requires a discerning and discriminating evaluation of the patient's bodily vigor, whether or not his heart and kidneys are sound, the area of involvement in the lung tissue and the presence of complications. His mental and nervous reactions to his disease and to the efforts being made in his behalf should be noted. Probably the most important part of treatment to an apprehensive patient is to allay his fears. Fear increases the respiratory rate, accelerates the pulse, produces restlessness, prevents sleep and rapidly destroys vitality.

In the presence of such a patient the physician and attendant should be casual in their manner and be careful not to fuss over him unnecessarily.

No more drugging than is absolutely necessary to support the circulation, relieve pain and promote rest should be attempted. Probably all of us have had valuable lessons in pneumonia therapy by being called to see patients on the day of the precritical rise, five to seven days after

being taken sick, and finding them in excellent condition. These patients have had no medical treatment whatever, poor nursing and very little food.

Most of the older country doctors have a very low mortality rate in pneumonia. Many of their patients have very poor nursing care. The country doctor expects his patient to get well, the patient is not apprehensive, medication is used only to relieve pain, promote rest and support the circulation. Such patients with proper nursing care would of course have been made more comfortable through their illness. The point I want to make is, that there is no known cure for pneumonia and that the disease is self limited and is not fatal in the great majority of cases if nature is allowed to take its course. We are apt to do too much drugging rather than too little.

Modern pneumonia therapy has known more enthusiastic advocates of various therapeutic measures than any other disease. Each one was heralded as a boon to the pneumonia patient, had its enthusiastic adherents for a time and was discarded. Among them was the open air treatment, the cold pack, immersion in cold bath, cold sponges, antipneumococcic serum leucocytic extracts, pneumococcus-vaccine, autolyzed pneumococci, chemoimmunology and various others. None of them are specific in any sense and most of them may be valuable adjuvants in the treatment of pneumonia. Careful consideration of the general condition of the patient, the existing complications and detailed instructions for the nursing care are essential. In no disease is mental and physical rest more imperative.

CLOTHING AND COVERS

Elsner, in Forcheimer's Therapeusis of Internal Diseases, says, "The patient should not be burdened by unnecessary covering. He is laboring from the beginning of the disease to overcome mechanical obstruction in the lung, and is in no condition to lift unnecessary weight or coverings with each inspiration. Considering the rapidity of inspirations, the importance of this fact becomes clear." A night shirt open in front should be worn, and the bed clothing should be sufficient to keep the patient warm in a room at a temperature of 65 degrees Fahrenheit.

FRESH AIR

An abundance of pure air for the patient must be insisted upon and only one nurse or attendant should be allowed in the sick room. With plenty of fresh air the work of the heart is reduced, the heart muscle is better nourished because of a slowing of the rate and vitality is sustained and strengthened.

POSITION IN BED

A comfortable position in bed lessens the wear on the patient's vitality and is an important factor in promoting rest and sleep. Volland states that, "patients should be kept at absolute rest," he leaves the patient in

the position he chooses of his own volition. If the patient is on his back and is comfortable he leaves him there. He makes no examination which requires the slightest movement on the part of the patient, and insists upon absolute rest throughout the acute stages of the disease. The hearts of pneumonics are already overtaxed and any movement on the part of the patient increases the work of the heart, accelerates the respiratory rate and endangers the life of the patient. Even the effort required in talking has the same effect and the patient should be instructed to conserve his strength by absolute rest and to refrain from talking. To require the patient to breathe deeply or to repeat numbers while he is being examined is very trying on him. Very young patients, very old patients and those who have complicating cardiac diseases may require turning or propping up, but this is done by the nurse or attendant and the comfort of the patient and the respiratory rate should be watched in the various positions. The position which gives the most rest and comfort should be the one most constantly used. Delirious patients should be handled in the same manner.

HYDROTHERAPY

Plain cold water by mouth every one or two hours in amounts not exceeding eight ounces is very important. It adds to the patient's comfort and assists in reducing and relieving toxemia. Tepid sponges by the nurse once or twice a day adds greatly to the comfort of the patient. In the homes of the poor and ignorant where no trained nurse is available no bathing should be attempted in cold water. I have repeatedly observed that the mortality in such homes where no baths are given is just about on a par with that among the better class of patients where the skin is kept in good condition by baths. However the unbathed patients do not look as comfortable throughout their illness as the more favored patients.

DIET

The subject of feeding in pneumonia is one over which there is considerable controversy. In uncomplicated cases in otherwise healthy patients, not much food is required until after the crisis. If a urinalysis is done during the acute stages albumin will be found in nearly all cases. At the outset of the disease the blood pressure is elevated. All of the organs of the body are suddenly thrown into a state of defense. The digestive and excretory organs are not capable of handling even a moderate amount of food at the outset. Orange juice, grapefruit, coffee, broth and buttermilk or lactic acid milk will suffice for the first few days. Potter says, "owing to the greater ease of digestion and the higher nutritive value of the animal class, this class is more frequently called into service than is the vegetable class alone, owing to lower nutritive value and higher caloric value and antibacteriological influences, the vegetable class can often be utilized to greater advantage." Eggs and eggnogs are not well tolerated if there is a tendency to flatulence and putrefaction. Cereals, acid fruits, ground rare meats, toast and crackers with sweet milk may be added as fast as the patient's condition warrants.

SYMPTOMATIC TREATMENT—GASTRO-INTESTINAL TRACT

Probably every patient should be given calomel at the beginning of the attack. In older children and adults this should be followed by the liquid citrate of magnesia or pluto water. In infants and young children castor oil or castoria may be used instead of the saline. After the initial purgation the bowels should be kept open by simple laxatives if necessary, but the patient should not be purged. If flatulence and ballooning begin to develop hot applications should be applied to the abdomen, pituitrin in one c.c. doses should be given and the amount of food at each feeding carefully restricted. Putrefactive foods should be prohibited.

TO RELIEVE THE PAIN AND COUGH

Mustard plasters, hot water bottles, and antiphlogistine are useful in relieving pain. Onion poultices are comforting to some patients. Cold applications will often relieve the patient but I prefer other methods. Codein and aspirin in capsules are usually effective in conjunction with poultices or heat. If pain is not severe I give Dover's powder and aspirin routinely in doses of two and a half grains each every four hours to an adult. If the cough is troublesome codein or morphine should be given to control it.

TO COMBAT THE TOXEMIA

In some toxic cases nothing is of avail. They are hopeless from the outset. In such cases the secretory and excretory organs are overwhelmed and all the tissues of the body quickly become functionless. In other less severe cases various measures may be resorted to, however it is questionable whether many of them do good. Frequent sponges, water every hour by mouth, careful restriction of the diet, soda enemas twice daily and plenty of fresh air at 65 degrees Fahrenheit are probably the safest and most effective measures. Alcohol is contraindicated because of the well known fact that it impairs muscular activity. We would not think of giving a toxic pneumonic an anesthetic of chloroform or ether, yet we do sometimes give alcohol, which in sufficient quantity will produce the same condition. In my opinion even in the average therapeutic dose the patient's chance for recovery is lessened.

TO SUPPORT THE CIRCULATION

There is much difference of opinion as to the procedure best calculated to bring a patient's heart through the attack in good condition. Many of the older practitioners give sweet spirits of nitre in the earlier stages. This seems to me a rational procedure as blood pressure is higher at this time. In the latter stages of the disease digitalis seems to be universally employed. Strophanthin may be used instead of digitalis by some doctors who are more familiar with its use. Pituitrin and vasopressin are useful. Sponges, cold air and absolute rest are valuable. Hot black coffee is very useful when the patient's heart action is feeble.

NERVOUS SYSTEM

Morphine, codein, chloral, and barbital are probably the most useful drugs to quiet the restlessness in delirious patients. Bromides are not well tolerated in toxic conditions. A comfortable position in bed, clean sheets and pillows, sponges and fresh air are valuable aids.

SPECIFIC TREATMENT

There have been many enthusiastic reports on specific treatment by pneumococcic serums, vaccines and immunogens but it is questionable whether any of them cut short the period of the disease or lower the mortality.

Romer says, "Welcomed with exaggerated hope; thrown overboard after the first bitter disappointment, antipneumococcic serum must find a place for itself in human therapy. Ethylhydrocuprein is one of the newer drugs for which specificity against the pneumococcus was claimed. It has been found to be a rather dangerous remedy however. Optic neuritis sometimes develops from its use and total permanent blindness has been reported as a result of the drug. The editor of the A. M. A. Journal, in "Queries and Minor Notes," states that, "to have any effect it must be given in the largest dose tolerated and at the earliest possible moment."

The most enthusiastic recent report is one by Dr. Herbert W. Knott published in the British Medical Journal and reported in the 1927 "Year Book." Potassium permanganate solution is given per rectum every four hours for the first twenty-four to thirty-six hours in a strength of two grains to a pint and a half of water. This is given warm and is allowed to run in slowly. No previous enema is necessary except before the first injection. Some of the injections will not be retained more than a few minutes, but in giving them every four hours enough will be retained to secure results. When the temperature reaches normal the injections are reduced to two a day for three days and then one a day for three more days. Two striking results are noted when this treatment is used. The first is mucus in the stools and the second is the ease with which mouthfuls of bright red sputum is raised. The consistency changes from a tough, stringy muco-pus to a bright red fluid. This is quickly noticed by the patient and nurse, and the nurse or attendant should be notified in advance to expect it, as it is sometimes alarming. I am convinced that the permanganate solution is responsible for the change but whether it actually shortens the duration of the disease or reduces mortality I am not prepared to say.

To sum up I cannot do better than to quote Dr. H. Brooks, who is quoted in the 1928 "Year Book" as emphasizing the fact that to all practical purposes the medical profession is still as helpless in the treatment of pneumonia as it was a quarter of a century ago. Much, however, has been learned as to treatment of the pneumonia patient in contradistinction to treatment of the disease itself.

The most essential single object to be accomplished in the handling of these patients is rest, not only physical, but mental and emotional as well. Quiet surroundings are needed. Visitors should be excluded. The patient should be allowed to select his own position in bed. Cough should be combated by codein, morphine, or opium in another form. Too much bathing and too frequent medication are harmful. Frequent and prolonged examinations by the physician are wearing on the patient. Expectorants are contraindicated. To alleviate the symptoms as they arise promote rest and conserve the patient's vitality should be the constant aim in the treatment of pneumonia.

PRESENT-DAY STATUS OF DIGITALIS THERAPY

By Roscoe D. McMillan, M.D., Red Springs

Digitalis, to my mind, is one of the most valuable and at the same time one of the most abused drugs of today. When we assign digitalis to its proper place in medicine its field of usefulness becomes considerably narrowed. We must not be unreasonable and demand of this drug the impossible.

Digitalis is not the sovereign remedy for all affections of the heart. It has no effect whatever in curtailing the incidence of heart disease. It will never restore elasticity to sclerosed blood vessels; it will not increase the lumen of constricted coronary arteries; it will not curb the malign activity of bacteria which have lodged in endocardium or myocardium and there produced inflammatory reaction.

Since the time of Withering (1775) digitalis has had a recognized place in medicine in spite of the fact many authoritative clinicians have waged wordy battles.

Today we prescribe digitalis for three pharmacological purposes:

(1) To slow the heart as a whole, both auricles and ventricles.

(2) To slow the ventricles alone by reducing the impulses it receives from the auricles.

(3) To improve the tone and contractile power of the ventricular muscle. It also has a very special use in auricular flutter.

In other words digitalis is prescribed for its effect upon the heart itself and for no other purpose. The height of blood pressure or the failure of the kidneys alters in no way the decision to employ or not to employ the drug, and alters in no way the amount prescribed. So far as it slows and steadies the heart its action is one of sedation. So far as it improves the tone and contractile power its action is one of stimulation.

Its chief field of usefulness is in cases of ruptured compensation in valvular disease. The practice of prescribing digitalis for patients who show only a heart murmur and no evidence of cardiac failure cannot be too strongly condemned.

In cardiac patients the elimination of the foci of infection, the regulation of the patient's hygiene, the careful supervision of the dietary, the

regulation of work hours, and those of sleep and rest are measures which are equally if not more important than adequate administration of digitalis. When heart failure occurs and accompanies a valvular defect then digitalis may be used with benefit.

Digitalis stands out pre-eminently as the drug of choice in cases of auricular fibrillation. A more exact knowledge of the pathological physiology of this condition than time and space will permit at this time including the clinical features of value in its diagnosis are essential to its treatment if consistently good results are to be obtained.

The work of Thomas Lewis has shown that over 40 per cent of all cases of heart disease are due to auricular fibrillation. In this condition digitalis does good by cutting off or blocking the showers of impulses which would otherwise pass to the ventricles and so fatigue or exhaust the heart muscle. It has the effect of depressing the auriculo-ventricular conductive system and blocking auricular impulses which bombard the ventricle and cause it to respond at a tremendous rate. Digitalis in massive doses results in slowing the ventricular rate and often restores the heart to a fair degree of compensation. In other words digitalis does not cure auricular fibrillation. It merely serves to protect the ventricle, while the auricle continues to fibrillate as before, though in some cases a slowing of the fibrillation waves has been noted. Yet in some transient attacks of fibrillation which at times results from the use of digitalis in auricular flutter, digitalis may cause auricular fibrillation. The drug does not necessarily slow the heart, but in auricular fibrillation with decompensation good effects are often seen in other manifestations, such as: reduction in size of liver, and heart, disappearance of edema, cyanosis and dyspnea, etc.

In the treatment of auricular flutter digitalis is often very effective. Its peculiar action in converting flutter to fibrillation is well recognized and when this occurs the drug should be promptly discontinued. If this is done frequently the rhythm returns to normal.

In paroxysmal tachycardia digitalis is often used, and as a rule has little value in cutting short the attack. If, however, signs of cardiac failure develop in long continued paroxysms of tachycardia digitalis can be used to advantage.

Arrhythmia due to extra-systoles is not in itself an indication for the use of digitalis. At this point I must say that digitalis is capable of producing every known type of cardiac arrhythmia and in fact may produce types of arrhythmia that can be caused in no other way than by the administration of this drug. The occurrence of arrhythmia following the administration of digitalis calls for careful investigation and maybe the first indication of the toxic effect of the drug.

Incomplete heart block, digitalis is to be used with extreme caution. Its peculiar property of diminishing conductivity of the auriculo-ventricular bundle may convert incomplete to complete block, with, at times, serious consequences. Some degree of heart block is usually present in

diphtheria, therefore the presence of this disease contraindicates the use of digitalis. If, however, the patient has complete heart block and there is evidence of cardiac failure, digitalis can be used without hesitation.

Stokes-Adams syndrome due to temporary occurrence of complete block may sometimes be averted by converting incomplete block and maintaining it with digitalis.

In that symptom-complex known as angina pectoris many physicians believe that digitalis should be tabooed because of its supposed action in raising blood pressure. Recent investigations, however, all point to the inaccuracy of this belief. Patients who show edema and failing circulation and who, on exertion, have distinct anginal pains, may greatly improve under digitalis. Huge doses are not indicated, but those doses which will add to the tone of the cardiac muscle in the sense of increasing its systolic energy as shown in the increasing vigor of the pulse are best. One may give from 5 to 10 minims of the tincture, morning and night, or three times a day. The best preparation for long continued use is the powdered leaves in half grain doses made in pill form with extract of gentian and given morning and night over long periods of time.

While no one would attempt to control the tachycardia and the cardiac damage which results from long continued hyperactivity of the thyroid gland in hyperthyroidism with this drug, nevertheless it is of considerable value in the preoperative treatment of the patient. It lessens cardiac output and diminishes the ventricular rate when fibrillation has occurred.

There is considerable difference of opinion as to the value of digitalis in pneumonia. Schmiedeberg in a resume of the literature prior to 1883, notes that Ferrier recommended digitalis as early as the end of the eighteenth century as a substitute for phlebotomy. Currie (1804) reintroduced it after nearly a half a century of disuse. Among the present day clinicians, MacKenzie feels that it is of little benefit. Hare is not enthusiastic, while Carhart believes that the use of digitalis in the first and second stages is one of the causes of the large death rate. Brunton finds that digitalis at a high temperature completely loses its power of slowing the heart through the vagus. Many consider that digitalis is only justified in those cases of pneumonia where auricular fibrillation or cardiac failure are present. Hart is also of this opinion. Christian says: I see no advantage of the routine use of digitalis in pneumonia . . . If auricular fibrillation develops, or decompensation is present, digitalis is very useful. Gibson expresses similar views. White in discussing the heart in infectious diseases said: "We are a people of fads and fancies, and it seems to me at the present time the fad is digitalis as a routine to avert circulatory failure in infectious diseases." He believes that unless the drug has a real therapeutic effect in pneumonia it might be unwise to add the toxic action of very large doses as advocated to that of the disease. In a carefully controlled series of cases Cohen and Jamison conclude that "Digitalis acts during the febrile period of pneumonia and produces a beneficial, possibly

a life-saving effect, in cases of auricular irregularity (fibrillation and flutter). Whatever beneficial action it has on the normally beating heart, may be expected from its use in the febrile heart in pneumonia. Brooks and Carroll say: "It is our custom to give digitalis at the moment the diagnosis is made or even in highly suspicious cases." Bishop is equally enthusiastic. Romberg gives digitalis to all pneumonia patients suffering from heart disease, as soon as the diagnosis is made. Phillips, Bliss, and Stone from a study of a series of 871 cases believe that "the use of a standardized tincture of digitalis in sufficient dosage to produce physiologic effect, is responsible for a decrease of deaths not associated with empyema or other septic complications." My personal experience of giving digitalis in large enough dosage to get physiologic effect as soon as the diagnosis is made, from 1921 to present time coincides with Stone. At the same time I realize much is to be taken into consideration especially as regards age, severity of epidemics, and of individual illness, complications and the amount of digitalis given must all be assembled before conclusive evidence can be obtained as to the value of digitalis in pneumonia. I am nevertheless a strong advocate of early administration of digitalis in large enough dosage to get physiologic effect.

In acute endocarditis digitalis is not absolutely necessary. Some think it may be harmful in causing overstrain of the hypersensitive muscle, or in causing embolism, owing to the strong contractions. Others think it may be beneficial in preventing dilatation.

In cases of pericarditis when the heart is not injured by prolonged fever, small doses of digitalis may do good by slowing the heart.

Mitral insufficiency there is a systolic regurgitation of blood from ventricle to auricle. In such cases the tendency is for the muscle of left ventricle to hypertrophy and so compensate for the valvular defect. In cases where the muscle is flabby and fails to compensate, digitalis may prove valuable.

Mitral stenosis the mitral orifice is narrowed and obstructs the circulation. In such cases compensation is attained by hypertrophy of the left auricle, and of the right ventricle. Digitalis may aid in this compensation by lengthening the time of diastole and by increasing the tone of the muscle.

Since auricular fibrillation is frequently accompanied by disease of the mitral valves, digitalis often gives better results than in aortic cases, which are less frequently followed by fibrillation.

It was formally thought that aortic insufficiency contraindicated digitalis because it prolonged diastole and would allow the blood in the brain to gravitate back to the heart and so produce syncope. Of course this fear is without basis.

In cases with coronary sclerosis and myocarditis, regardless of the rhythm, digitalis must be used with care and never in massive doses.

Massive doses for full therapeutic digitalization are called for regardless of the rhythm in serious or acute heart failure. In pneumonia such

doses may be used to forestall cardiac failure. The average amount required for full digitalization may be calculated on the basis of 2 or 3 minims of the tincture or 1/5 grain of powdered digitalis per pound of body weight, but on account of possible digitalis hypersusceptibility such amounts are never given in a single but in divided doses by some such method as that of Eggleson. From his findings, 2 or 3 minims per pound of body weight is the quantity required to produce therapeutic saturation. This is given in divided doses: if the case is urgent and the patient has received no digitalis within the preceding ten days, from one-third to one-half of the total calculated amount is given at the first dose. After an interval of six hours from one-fifth to one-quarter of the total is administered. After a second six hours, from one-eighth to one-sixth of the total amount is given. Then if more digitalis is needed, about one-tenth of the total amount may be repeated every six hours until maximal digitalization is secured.

When digitalis is given by this method, its effect should be noted within 6 to 8 hours and continue thus for at least 24 to 36 hours. The rate of excretion of digitalis following such dosage amounts to about 20 minims per day so that the effect of this dosage lasts for four or five days; after this it is necessary to give from 20 to 30 minims twice daily. These are but general rules of therapy. It cannot be too strongly emphasized that the heart rate (in the absence of toxic symptoms) is the indicator of therapeutic saturation.

Full digitalization may be obtained from six to twenty-four hours by mouth, rectal, or intramuscular administration.

Intravenous administration has no advantages, results in more untoward actions than mouth administration, has no well established dose and is especially dangerous.

Subcutaneous doses are painful and may result in abscess formation.

Rapid full digitalization should not be attempted in an ambulatory patient, or one with myocarditis and coronary sclerosis.

When a patient has been taking digitalis within ten days to three weeks the drug should be administered with great caution.

Smaller doses ranging from 5 to 10 minims a day to about 60 minims and determined largely by experience with the particular patient are indicated when owing to a lack of cardiac reserve force there is threatened failure of compensation.

Small doses ordinarily do not show an immediate measurable effect, and to check up the effect of digitalis in any dosage by blood pressure readings is futile.

The administration of the tincture in drops is strikingly uncertain and should be abandoned. This is a frequent cause of failure to achieve results. For instance, from 18 to 30 drops represent 10 minims of the tincture of digitalis. This variation is due to (1) the shape of the dropper, (2) the position in which it is held, (3) the speed at which it drops, temperature, etc. For this reason it should always be measured in minims.

The best preparations are the official powdered digitalis and the ten per cent tincture. At this point there remains much to be discussed in digitalis therapy, so often overlooked but which unless proper attention is given to it, frustrates all such medication. This is the question of administering the glucosides of digitalis in an active and suitable form. Only such preparations as one can be sure have not deteriorated should be used. As yet the glucosides cannot be estimated chemically and we are forced therefore to depend on physiological standardization by reputable manufacturing chemists.

Overdosage with digitalis is apt to produce unpleasant and in greater amounts, dangerous results. Since the approach to this condition is heralded by definite signs, it is essential to be on the watch for and recognize these. In ordinary cases the pulse rate is sufficient guide, but in a certain number, toxic effects develop early; in which cases digitalis dosage must be decreased or discontinued. Anorexia followed by nausea and vomiting and occasionally diarrhoea are the most usual toxic symptoms. I especially call your attention to the loss of appetite, this is an early and important sign and may appear 2 or 3 days before any other manifestation of digitalis intolerance. These symptoms have been ascribed to the irritant effect of some constituent of digitalis on the gastric and intestinal mucosa, but recent evidence adduced by Hatcher is to the effect that these symptoms are produced by reflex vagus activity from the sensory vagus endings in the heart, i.e., a cardio-gastric reflex. It is possible that digitalis may also stimulate the vomiting centre in the medulla. Extreme slowing of the heart (or heart block) indicates overdosage with digitalis, but before this occurs, other signs of intoxication will be present. Extra-systoles or pulsus bigeminus are the main ones occurring in the heart.

Bastedo gives the following 10 rules when to cease administering the drug:

1. Digitalization as shown by the electrocardiograph.
2. When the desired effect is accomplished, as by the disappearance of dropsy or enlargement of liver, or by the slowing and steadying of the pulse in auricular fibrillation.
3. If the patient complains of anorexia, headache, dizziness or light-headiness.
4. Nausea and vomiting ensues.
5. If the cardiac rates goes below 60.
6. The rate slows suddenly.
7. Coupled rhythm appears.
8. Premature beats occur.
9. A regular rhythm becomes irregular or intermittent.
10. Sinus arrhythmia or phasic arrhythmia occurs.

DISCUSSION

Dr. E. J. Wannamaker, (Charlotte): Mr. Chairman, Dr. McMillan has given us a most instructive paper, and his investigation of the use of digitalis in acute infections, such as pneumonia, is especially helpful. I fully agree with him on its early administration.

Another point about which there is a maximum amount of confusion in the literature, is the slowing of the heart by digitalis. It is only in certain adult individuals, those with unusually responsive vagi, that we get definite slowing of a heart already having normal rhythm; the slowing is due entirely to vagus action on the sino-auricular node, this being present in every individual, but in the average adult this slowing effect is more than counteracted by the increased irritability of the auricular musculature and the result is an unchanged or an increased cardiac rate. In children, however, the vagi are unusually responsive, and most children therefore give slower rates after digitalis. A few adults also have this increased sensitivity of the vagi and give slower rates, but they are the exceptions.

In febrile patients the indications for the administration of digitalis and its action are essentially the same as in the non-febrile. No slowing need be expected and its use should be restricted to certain of the arrhythmias and decompensation—present or impending.

One point not referred to by Dr. McMillan which I would like to mention is the futility of digitalis administration in shock, traumatic or post-operative. In this condition the heart muscle is capable and it is the vascular system that has given way. Adrenalin is the drug to be used, it will tend to counteract the vascular dilatation and in addition is fully as powerful as digitalis in its stimulating effect on the cardiac muscle.

Dr. B. W. Dewar, (Raleigh): I didn't get in to hear the first part of Dr. McMillan's paper. I didn't know whether he had said anything about the use of digitalis in paroxysmal tachycardia or not. There are a lot of authorities that believe it does help. There are others who believe that it does not. I believe most of us do give it in paroxysmal tachycardia.

Recently at Johns Hopkins they have been using a preparation called ergotim, hypodermically, in paroxysmal tachycardia, and claim a specific action in stopping the attack. I merely mention that, though I haven't had the opportunity of using it since I have been informed about it.

The other type of condition that I didn't know whether you spoke about was the use of digitalis in exophthalmic or toxic adenoma before operation. Plummer of Rochester, Minnesota, the Mayo Clinic, does not give digitalis in these cases. His reason for that is that he is unable to tell when the ataxic effects begin because the heart rate is already very rapid. However, in the cases that they were using it on, he called attention to a slight amount of delirium at times before toxic symptoms developed. I believe that most of our medical men in this state, in the severe type of goitre cases, pre-operatively when Lugol's solution is used and the heart rate is not down, and the thyroid rate remains up,—by that I mean

possibly over fifty—even after the routine measures have been tried, do use digitalis. My own experience makes me believe that it is a most valuable drug used pre-operatively before the toxic goitres, namely exophthalmic and toxic goitres.

Chairman Nash: Is there any further business to come before the Section? Due to the fact that the Medical Society has voted to combine the sections of Practice and Materia Medica, there will be no election of officers this year. Hereafter they will be combined, and we will all be under the Practice of Medicine Section.

The meeting adjourned at 3:45.

SECTION ON PRACTICE OF MEDICINE

CHAIRMAN: DR. R. T. UPCHURCH, Henderson (not present)

TUESDAY AFTERNOON SESSION

APRIL 16, 1929

The Section on Practice of Medicine of the Medical Society of the State of North Carolina was called to order in the Ballroom of the O. Henry Hotel, Greensboro, North Carolina, at 2:30 o'clock, by Dr. S. D. Nesbit, who acted in the absence of the Chairman, Dr. Robert T. Upchurch.

CHAIRMAN NESBIT: I have no authority to start this meeting, but I will preside until Dr. Upchurch arrives. The first paper is "Compression Therapy in Pulmonary Tuberculosis," by Dr. J. W. Dickie, of Southern Pines.

THE RELATIONSHIP OF REST AND COMPRESSION THERAPY IN THE TREATMENT OF PULMONARY TUBERCULOSIS

By J. W. DICKIE, M.D., Southern Pines

Mr. Chairman and Fellow Members of the North Carolina State Medical Society:

More progress has been made in the treatment of pulmonary tuberculosis during the last two decades than in the preceding twenty centuries. Previous to the Christian era, the early Greek physicians, Aretaeus, Celsus, and Galen, advocated relative rest, moderate exercise and a diet of rich, easily digested food (including raw eggs and milk), fresh air, and occasional changes of climate. Does this not compare favorably with the prevailing method of treatment at the beginning of the present century?

The way was paved for progress in the treatment of the disease when in 1882 Koch discovered the tubercle bacillus. Trudeau emphasized the importance of fresh air and to a less degree the importance of rest. Dunn and others of a later day brought rest into its proper place as a therapeutic agent. It remains for physicians of today to take full advantage of the use of the latest developments in the treatment of tuberculosis. I refer to the various forms of compression therapy, chief of which are artificial pneumothorax, phrenicectomy and thorocoplasty.

To emphasize the logical relationship between rest and compression therapy, I invite your attention first to a brief consideration of the sovereign remedy, *rest*. Rest is the one method of treatment which has stood the test of time and which still dominates the therapeutic field.

As Krause has wisely stated in his admirable little book, "Rest and Other Things": "Until the time comes when every tuberculosis patient (and he well might have added every practicing physician), upon being asked what is the most important element in the treatment of tuberculosis, will unhesitatingly answer *rest,* the subject will always be timely." As he pointed out, "fresh air" and "putting on weight" even at this late day all to frequently take rank ahead of "rest."

Realizing that the thought may be father to the wish, I am constrained to believe that the seed sown on good soil by the late illustrious Dr. William Leroy Dunn and others is bearing fruit and that since the first publication of Dr. Krause's book, the importance of rest is rapidly coming into its own. A notable example is the recent radical change in the treatment of our World's War veterans.

But what of the appreciable number of patients where time has been lost in establishing a diagnosis, or of the smaller number where an early diagnosis and proper treatment have not checked the ravages of the disease? Have we anything more to offer these patients, or is our therapy exhausted? Emphatically, No! There is still hope for a large percentage of such patients and it marks the brightest chapter in the therapy of tuberculosis in recent years.

This leads to a discussion of the various forms of compression therapy. In resorting to these measures, we are prudently following nature's own suggestion. In proof, observe the retarded excursion of the diaphragm even in minimal apical lesions. Again, in advanced lesions note the displacement of the trachea and heart toward the affected side.

Artificial pneumothorax offers the greatest hope in the field of compression therapy. It is of interest to note that it was first advocated by Dr. James Carson of Liverpool in 1821. Apparently nothing came of his recommendation until the last two decades of the nineteenth century, when independently Italian, English and American physicians, notably Forlanini, Cayley and Murphy, made practical and successful use of this method of pulmonary collapse. Its therapeutic value did not meet with general favor until the last decade.

In artificial pneumothorax we apply the same principle used in the treatment of a fracture or even a superficial wound. The natural elasticity of the lungs and the constant motion of the heart and lungs retard the healing process. This handicap is overcome, for the surfaces of the lung are brought into close contact where destruction of lung tissue has taken place, and this immediately favors the healing process. It tends to prevent extension of the disease on the affected side. It promptly reduces toxemia, to the great relief and benefit of the patient.

The success of artificial pneumothorax depends upon the suitable selection of cases, proper supervision and close observation of patients under treatment and reasonable skill in the technique of the operation.

As to the selection of cases, I believe I am conservative in the statement that at least ten per cent of the average group of tuberculosis

patients may be distinctly benefited by its use. Furthermore, frankness demands the statement that most of the fatal cases of tuberculosis were at one time in a favorable condition for its use.

When the condition of the contralateral lung is favorable, it is my present policy to recommend it in every case where the patient fails to show improvement after three months under a strict regime of sanatorium care. This regime must include complete rest in bed with bed baths. The progress of the disease may call for its use at an earlier date and delay may be fatal. The danger of the infection spreading into the good lung is very real, especially in the presence of ulceration and a positive sputum test. Delay invites the formation of adhesions, which account for failure in more than seventy-five per cent of all cases.

The case of choice is one with extensive and progressive disease in one lung, the other lung being clear or nearly so. To this group may be safely added a considerable number where the better lung is the seat of a quiescent, arrested or even moderately active lesion, provided the latter is well circumscribed in the upper lobe of the lung and does not involve very much of the parenchyma. Obviously the selection of cases in the latter group calls for a finer sense of discrimination and judgment.

I wish to place especial emphasis on the good effect of artificial pneumothorax in pulmonary hemorrhage. The results are little short of the spectacular. It has dispelled the nightmare of this distressing and not infrequently dangerous symptom. Every patient with recurrent haemotosis is entitled to its benefits.

Usually it is not difficult to identify the bleeding lung. When in doubt, the deciding factor should be the evidence of more advanced disease in one lung. This is especially true in the presence of cavity formation.

The bleeding is arrested more by immobilization than by compression. A dose of only 250 to 400 c.c. of gas is required. A larger dose is distinctly contraindicated. Among other things, it predisposes to aspiration pneumonia.

Artificial pneumothorax is contraindicated when the better lung is the seat of a very active or extensive lesion, particularly in the lower lobe. In far advanced laryngeal and intestinal tuberculosis it is of no avail. Advanced emphysema, asthma and serious diseases of the heart or kidneys preclude its use.

Too much emphasis cannot be placed on the necessity for closely observing and supervising the care of a patient receiving pneumothorax treatments. Careful although not exhaustive chest examinations should be made before and after each refill. The good lung must be watched with the greatest care. Serial X-ray pictures are indispensable. Success of the treatments demands that the patient be kept on a strict regime of bed rest until such evidence of toxemia as anorexia, excessive cough and expectoration, high fever, night sweats and loss of weight have subsided; until repeated sputum tests are negative for tubercle bacilli; and until the physical examination and stereoscopic X-ray films show conclusively that

a fair degree of collapse has been established. *For the best form of compression therapy is an adjunct to, not a substitute for, bed rest.*

The technique of the operation does not come within the scope of this paper. It is comparatively simple and within the reach of any medical man. It may be administered safely and successfully in any private home with the need of surprisingly little nursing assistance. From an economic point of view, it can be performed at comparatively small cost without undue hardship to patient or physician.

Despite brilliant results obtained every day by this form of compression therapy, I warn against its adoption as a "cure all." Bearing in mind always the tragedy of waiting too long, it is well to remember that its employment is not without danger even in skilled hands. Therefore, it should not be advocated in early cases of tuberculosis that show reasonably prompt response to rest.

The chief objection to artificial pneumothorax is that a period of from one to five years is required to effect a cure, although the patient may return to his former environment and occupation long before the expiration of this time limit. It has the advantage over other forms of compression therapy in that any harm done is not irreparable. Treatments may be abandoned at any time without harm to the patient.

Phrenicotomy is the severing of the phrenic nerve and its accessory. It produces a temporary paralysis of the diaphragm on one side. The nerve regenerates in five or six months so the effect is not permanent. Phrenicectomy is the removal of a large segment or all of the nerve and its accessory. The effect is permanent. For the sake of brevity, I shall consider them collectively.

The operation is performed under local anesthesia. To expose the nerve an incision is made over the posterior triangle, either just above and parallel to the clavicle, or along the posterior border of the sterno-mastoid muscle. In the hands of an experienced operator, there is little likelihood of harm to the patient. By severing the nerve the diaphragm is elevated from four to eight cm. on the right side and from two to six cm. on the left side. There is a corresponding collapse of the lung.

Used independently, perhaps its greatest value is in basilar tuberculosis, where it is very effective in relieving a troublesome cough. It is used as an adjunct to pneumothorax, or thoracoplasty, or both. In the former, it is of special value when adhesions retard or prevent a successful collapse. In the presence of a suspicious lesion in the so-called good lung, it is of value in testing out its integrity as a preliminary to either of the other procedures. By producing a partial collapse, it tends to reduce toxemia and thereby improves the general physical condition of the patient as a preliminary to the more serious operation—thoracoplasty. It has a definite, although limited, field of usefulness.

In a limited number of cases radical surgical procedures are indicated. I shall discuss briefly the one most frequently used—paravertebral extrapleural thoracoplasty. It is the logical sequel to artificial pneumothorax,

although preceding it by a definite interval. The operation consists in the removal in the paravertebral region of a small section of first ten or eleven ribs, a total of about fifty inches from all the ribs. The size of the section from each rib depends on the nature and location of the disease in the lung. The two-stage operation is the operation of choice, if not of necessity. Sections from the lower ribs—from the fifth to the eleventh—are first removed; the remainder—from the first to fifth—as soon afterward as the patient's condition warrants it; generally in from two to four weeks. Most of the operation may be successfully performed under a local anesthetic. Gas and oxygen may be necessary at certain stages of the operation.

The indications and contraindications for its use are similar to those of pneumothorax, although subject to a much stricter interpretation. The integrity of the contralateral lung must be established beyond a reasonable doubt, for an additional burden is placed on this lung suddenly, not gradually, as in the case of pneumothorax. Whatever happens unfavorably afterward, the damage is irrevocable.

Contrary to the opinion of many physicians and all patients, the lung does not cease to function. In reality a complete and successful thoracoplasty does not give the amount of collapse obtained by a satisfactory pneumothorax. The lung is never under compression. It is in a state of fixed expiration. The end results are the same as in pneumothorax; success depending largely upon the fibrous changes produced by the stasis of the lymph and blood supply.

This procedure is not to be considered lightly by either patient or physician. It has a very definite though limited field of usefulness. It does save life; furthermore, it may spare many patients the unhappy experience of years of invalidism.

In conclusion, for the present at least, rest remains the keystone of treatment, and a discussion of the various forms of compression therapy serves to emphasize the importance of early diagnosis and proper treatment.

Finally, I hazard the prophecy that the day is approaching when deaths from tuberculosis will no longer be taken as a matter of course. With few exceptions, we shall admit that they are the result of ignorance or of negligence.

This millennium in the therapy of tuberculosis will be brought about by the concerted action of three forces which cannot be defeated: first, with the improvement in the general economic condition of the masses and a full awakening and quickening of interest by the public in all health measures, the "suspect" will go promptly to his physician for examination; second, physicians will have the skill, possess the facilities and take the time to establish a reasonably early diagnosis; finally, this rich and powerful country will make ample provision for the prompt treatment of every indigent tuberculosis subject.

DISCUSSION

Dr. Paul Ringer, (Asheville): I think that Dr. Dickie is to be very greatly congratulated on presenting such a comprehensive paper in such very brief space. Those of us who are doing lung work know of the voluminous literature that has appeared and is appearing on this very question of compression, related to or unrelated to rest, and it is refreshing to see a man engaged in that special work come before a general audience and give that audience in a few, clear paragraphs the gist of the whole matter. I can do nothing but praise his paper, and I cannot take issue with him on any single point.

I would like to emphasize one or two things that he has said and one thing that he has not said.

In the first place, as regards compression therapy and pulmonary tuberculosis in general, we must remember that a certain portion of its success depends upon the type of pathological process with which we are dealing, it being fully well understood that any compression measure, from artificial pneumothorax on the one hand, down to thoracoplasty on the other, is not as well suited to the exudative case as it is to the fibroid case, and we can look forward to far better results in our more chronic conditions with a less exudate than to our more acute conditions with more exudate and more toxicity.

I would also, as did Dr. Dickie, sound a note of warning against too free employance of artificial pneumothorax and the other methods of compression therapy. It is a radical thing to put a lung out of business. Of course, with artificial pneumothorax we always say that we have the lung under control. That is very pretty on paper, but when you have been doing it as I have since 1912 you will find a certain number of lungs that you do not have under control. Things happen in the chest that are not expected, and the lung that theoretically should be compressed or expanded at will gets beyond control. So, a word of warning again as to indiscriminate use of compression.

In the last few years, I have been very much pleased with the success of phrenectomy. We have had it done probably in some twenty-five or thirty patients, and in no case that I have seen has the result been unsatisfactory or have there been any untoward symptoms or complications. One case stands out very clearly in my mind, of a woman who was running 101 with a large mesial cavity in the right lung and phrenectomy brought the temperature down to absolutely normal and reduced the sputum by 75 per cent. This woman is not well. She has too much trouble in the contralateral lung to justify an extrapleural thoracoplasty, and she is in such good shape that I would hesitate to advise it, and if I did advise it she would probably refuse to have it done. But the performance of this very minor operation of phrenectomy has simply turned the entire picture upside down and has changed a woman who was distinctly going down hill into one who is distinctly going up hill.

Extrapleural thoracoplasty is of course the last thing that we do, and it must be entered into soberly, advisedly, discretely, and in the fear of God, because it is no joke. The Bible says it is more blessed to give than to receive, and I believe that, but I hesitate, and have to be very certain that the indication is absolutely clear before advising an extrapleural thoracoplasty on a patient because I am subjecting them to a very severe, long-drawn-out and disagreeable ordeal, and yet I thoroughly believe in the procedure in the proper case. We have had some of ours done in two stages, some in three. Dr. Hedblom, of Chicago, advocates three, four, or even five stages, done fairly quickly, one after the other, (ten days, not more than two weeks) in order to avoid the pronounced post-operative shock that occurs when too great trauma is inflicted at one operative procedure upon the patient.

Again I must thank Dr. Dickie for bringing this matter before the Society, and I may congratulate the section in having had a man who was able to so clearly and succinctly give them the very points that the man not especially interested in lung therapy and particularly lung surgery should be expected to know and to appreciate. (Applause.)

Dr. J. W. Huston, (Asheville): Dr. Dickie spoke of the phrenicotomy as being useful chiefly for the basal lesion. I think also it is useful for a moderate lesion of the apex, probably very largely because with the immobilizing of the diaphragm we have a limitation of the apex as well as the base, and I believe, too, or at least it has been my feeling that for thoracoplasty the indications are just the same as they would be for the giving of gas, and to my mind it is reserved for the case for which you would use artificial pneumothorax if not interfered with by adhesions. When adhesions interfere, then I think of thoracoplasty. (Applause.)

AN ANALYTIC RESEARCH BASED UPON FOUR HUNDRED AND THIRTY-SIX HEALTH EXAMINATIONS

(Conducted in fifty-one North Carolina Counties, including a greographic range from Hyde to Cherokee, and from Ashe to Brunswick, from February, 1928, to March, 1929.)

By Frederick R. Taylor, B.S., M.D., High Point

For a little over a year, the Health Maintenance Bureau of the State Board of Health has been engaged in a state-wide campaign to arouse interest in periodic health examinations by means of personal interviews with physicians, talks to medical societies, and to a variety of lay organizations, and demonstration clinics. In these clinics, as most of you already know, we have made no attempt to examine any considerable number of persons in any one locality—they have been demonstrations, pure and simple, to show the value of such work to both the medical profession and the public, to get the doctors of the state to take an increasing interest in the careful examination of apparently healthy persons, and to get as

many of the people of the state as possible to go to their own physicians at least once a year for a health examination. So far, we have covered 75 counties of the state, but our clinical data come from only 51 counties. As a general rule, to which there have been a few exceptions for special reasons, clinics have not been held in counties having large and strongly organized medical societies—there we have felt it wise to get the societies to conduct their own campaigns as far as possible. In a few counties the influenza epidemic prevented clinics during the time at our disposal for those counties. In not more than three counties does lack of interest on the part of the medical profession explain the failure to hold clinics in them.

All the data reported here are based on our own personal examinations, made with the assistance of a laboratory technician, who also helped take a number of the histories. These examinations have been unhurried, and as careful as we knew how to make them. They have been conducted over a practically state-wide area, as shown by the title of this paper. It seems, therefore, timely to pause and take account of stock, as it were, and try to learn what lessons this work may teach us.

A few factors involved in the type of persons examined are of importance in interpreting these data.

1. They were persons supposed to be healthy, or practically so. One person was being treated for an antral sinusitis, but she also had an inoperable carcinoma of the rectum which no one knew anything about. Two others had some so-called indigestion—one was diagnosed a carcinoma of the liver, probably secondary to the stomach, and the other chronic gall-bladder disease. With a few such exceptions, all answered the question, "Do you consider yourself in good health," by "Yes," or "Practically so."

2. Most of our patients were middle-aged. This explains such things as the low incidence of hypertrophied tonsils and adenoids.

3. Comparatively few women were examined, hence the low incidence of gynecologic conditions. It is regretable that we kept no record of the sex incidence of our patients—the complete records of our examinations were left with the patient's own physician, and we merely made a copy of the diagnosis made on each patient. It is from these diagnoses that our data are obtained.

4. Most of our patients have been of a high grade of intelligence, who read a good deal, and take care of their teeth, hence the predominance of refractive errors over oral sepsis.

5. Our work last summer was done in the mountains, and we worked in the warmer parts of the state in the spring, fall, and winter, hence our low figures on eczematoid ringworm of the toes, one of the most frequent defects in the state in warm weather.

6. We made no attempt to compile data on venereal disease, as we had no time to wait for Wassermann reports. Bloods were frequently sent to the State Laboratory, and repeated prostatic massage advised to detect

gonococci, but the results of such work were learned only by the family doctor, as we had moved elsewhere by the time they were obtained.

7. We must have missed many psychoneurotic conditions, for such matters may require weeks of contact to gain a patient's confidence. Many conditions classified under "Harmful Habits" are no doubt on a psychoneurotic basis.

I have here a rather formidable array of statistics, which I will attempt neither to read, nor to express graphically in all its deail, for either would be impossible in the time and space available. They may be consulted on the board marked "Exhibit A" by anyone interested in any special details. That gives a complete list of the defects found, the number of persons having such defect, and the per cent of persons involved by each defect.

EXHIBIT A

ABNORMAL CONDITIONS NOTED IN FOUR HUNDRED AND THIRTY-SIX HEALTH EXAMINATIONS CONDUCTED IN FIFTY-ONE NORTH CAROLINA COUNTIES, INCLUDING A GEOGRAPHIC RANGE FROM HYDE TO CHEROKEE, AND FROM ASHE TO BRUNSWICK, FEBRUARY 1928 TO MARCH 1929, INCLUSIVE.

Skin and Subcutaneous Tissues	*No. of Cases*	*Percent of Persons Involved*
Accidental vaccination scar of abdomen	1	0.23
Acne rosacea	1	0.23
Acne vulgaris, marked	10	2.29
Boils	3	0.69
Chloasma	1	0.23
Eczema, chronic	3	0.69
Eczematoid ringworm of feet	19	4.59
Eczematoid ringworm of groin	1	0.23
Fibromata of skin and subcutaneous tissues	17	3.90
Food eruptions	1	0.23
Hemangiomata, multiple	8	1.83
Infection of face	1	0.23
Keratotic spots	1	0.23
Lichen planus	1	0.23
Lipomata	3	0.69
Lupus erythematosus	1	0.23
Moles—large, numerous, or unusually black	20	4.54
Procain dermatitis	1	0.23
Psoriasis	1	0.23
Radium burn of long standing	1	0.23
Rhus dermatitis	1	0.23
Ringworm hand	1	0.23
Scabies	2	0.45
Scarring of body, extensive (electric burn)	1	0.23
Sebaceous cysts	2	0.45
Sunburn	1	0.23
Sycosis vulgaris	1	0.23
Tinea versicolor, extensive	6	1.38

	No. of Cases	Percent of Persons Involved
Tuberculosis cutis	1	0.23
Vitiligo	2	0.45
30 Varieties of Skin Defects.....Total	113	25.92
Eye.		
Blepharitis, chronic	1	0.23
Blindness, unilateral, cause undetermined	1	0.23
Cataract, traumatic	1	0.23
Glass eye	1	0.23
Glaucoma, chronic	1	0.23
Hordeolum	1	0.23
Pterygium, bilateral	3	0.69
Pterygium, unilateral	2	0.45
Refractive errors, uncorrected	165	37.84
Strabismus, external	1	0.23
Tobacco amblyopia	1	0.23
Undeveloped optic nerve, unilateral	1	0.23
12 Varieties of Eye Defects .....Total	179	41.06
Ear, Nose, Sinuses, and Throat.		
Adenoids	3	0.69
Coryza, acute	5	1.15
Deafness, all grades	30	6.88
Eczema of external ear	1	0.23
Eustachian tube, obstruction of	1	0.23
Laryngitis, acute	1	0.23
Myringitis, acute	1	0.23
Nasal Septum, obstructive deflection of	8	1.83
Nasopharyngitis, chronic	2	0.45
Otitis media, bilateral	1	0.23
Perforated nasal septum	1	0.23
Pharyngitis, acute	1	0.23
Pharyngitis, granular	1	0.23
Rhinitis, chronic	1	0.23
Sinusitis, antral, chronic	9	2.06
Sinusitis, frontal, chronic	2	0.45
Sinusitis, mastoid, chronic	1	0.23
Sinusitis, pansinusitis, chronic	1	0.23
Spur on nasal septum, obstructive	1	0.23
Tonsils, infected, chronic	57	13.07
Tonsils, hypertrophied	11	2.52
Turbinates, hypertrophied and obstructive	1	0.23
Uvula, elongated	1	0.23
Wax in ears, excessive	1	0.23
24 Varieties of Defects .....Total	142	32.57
Mouth, Teeth, and Tongue.		
Dental infection, all kinds	123	28.21
Jagged teeth, irritating mouth	1	0.23
Glossitis	1	0.23
Teeth, badly stained only, without infection	1	0.23

	No. of Cases	Percent of Persons Involved
Teeth, broken	2	0.45
Lips chapped	1	0.23
6 Varieties of Defects ... Total	129	29.59
Bronchi, Lungs, and Pleurae.		
Asthma, bronchial	2	0.45
Bronchiectasis	1	0.23
Bronchitis, subacute	2	0.45
Emphysema	2	0.45
Pleural thickening, unilateral	2	0.45
Pneumokoniosis	1	0.23
Tracheobronchitis, subacute	1	0.23
Tuberculosis, pulmonary, active	11	2.52
Tuberculosis, pulmonary, arrested	11	2.52
9 Varieties of Defects ... Total	33	7.57
Blood.		
Anemia, secondary	25	5.73
Anemia, pernicious	1	0.23
Eosinophilia, cause undetermined	7	1.61
3 Varieties of Defects ... Total	33	7.57
Circulation.		
Angina pectoris	3	0.69
Aneurism, subclavian	1	0.23
Arteriosclerosis	6	1.38
Atheroma of aorta	1	0.23
Congenital heart lesions—pulmonic stenosis and patent ductus	1	0.23
Extrasystoles	4	0.92
Functional murmur	2	0.45
Heart, hypertrophy of	3	0.69
Hypertension, essential	23	5.28
Hypertension, diastolic only	5	1.15
Hypotension, essential	7	1.61
Mitral regurgitation	3	0.69
Mitral stenosis	1	0.23
Myocardial weakness	5	1.15
Paroxysmal tachycardia	1	0.23
Pleuropericardial adhesions	1	0.23
Raynaud's disease	1	0.23
Tachycardia, psychoneurotic	1	0.23
Tobacco heart	1	0.23
Vagal attacks	1	0.23
Varicose veins of lower extremities	19	4.36
Vasomotor instability, general	1	0.23
22 Varieties of Defects ... Total	91	20.87
Postural Defects, Spine, etc.		
Coccyx, injured	1	0.23
Kyphosis	1	0.23

	No. of Cases	Percent of Persons Involved
Pigion breast, very marked asymmetric	1	0.23
Round shoulders, marked	28	6.42
Sacroiliac strain	1	0.23
Scoliosis, marked	1	0.23
6 Varieties of Defects Total	33	7.57
Abdomen.		
Abdominal wall, very lax	1	0.23
Adhesions, visceral	6	1.38
Appendicitis, chronic	35	8.03
Appendicitis, subacute	1	0.23
Bacillary dysentery	1	0.23
Colitis, mucous	1	0.23
Constipation, chronic	11	2.52
Convalescence from cholecystectomy, etc.	1	0.23
Diverticulitis, chronic	2	0.45
Epiplocele	1	0.23
Gall bladder disease, chronic	21	4.82
Gaseous distension, functional	1	0.23
Gastritis, chronic	2	0.45
Hernia, femoral, bilateral	1	0.23
Hernia, inguinal, bilateral	3	0.69
Hernia, inguinal, unilateral	15	3.44
Hernia, umbilical	1	0.23
Liver cirrhosis of	2	0.45
Liver, carcinoma of, secondary	1	0.23
Peritonitis, tuberculous	2	0.45
Sigmoiditis, chronic	1	0.23
21 Varieties of Defects Total	110	25.23
Rectum.		
Carcinoma	1	0.23
Hemorrhoids	55	12.61
Fissure	1	0.23
Fistula	1	0.23
Polyp	1	0.23
Prolapse, tendency to	1	0.23
Stricture	1	0.23
7 Varieties of Defects Total	61	13.99
Urinary Organs.		
Albuminuria due to recent influenza	1	0.23
Calculus, renal	4	0.92
Cystitis	17	3.90
Hydronephrosis, bilateral	1	0.23
Nephritis, acute	1	0.23
Nephritis, chronic hypertensive	12	2.75
Nephritis, type undetermined	3	0.69
Pyelitis, chronic	9	2.06
Tuberculosis of kidney	1	0.23

	No. of Cases	Percent of Persons Involved
Ureter, stricture of	3	0.69
10 Varieties of Defects ....Total	52	11.93
Male Reproductive Organs.		
Gonorrhea, chronic	1	0.23
Hemangioma of glans penis	1	0.23
Hydrocele of spermatic cord	3	0.69
Phimosis	7	1.61
Prepuce, adherent	1	0.23
Prepuce, elongated	2	0.45
Prostate, carcinoma of	1	0.23
Prostate, hypertrophy of	32	7.34
Prostatitis, chronic	5	1.15
Testicles, absence of (removed for bilateral tuberculosis)	1	0.23
Testicles, atrophy of, due to mumps	9	2.06
Testicles, tuberculosis of	1	0.23
Varicocele	6	1.38
13 Varieties of Defects ....Total	70	16.06
Female Reproductive Organs.		
N.B. The vast majority of our patients were men, hence these low figures.		
Cervicitis, chronic	1	0.23
Cervix lacerated or eroded	8	1.83
Pelvic cellulitis	1	0.23
Perineum, lacerated	1	0.23
Salpingitis	4	0.92
Uterus, displacement of	7	1.61
Uterus, double (double cervix)	1	0.23
Uterus, fibroid of	2	0.45
Pelvic lacerations, general	6	1.38
9 Varieties of Defects ....Total	31	7.11
Metabolic Diseases.		
Glycosuria	16	3.67
Malnutrition	52	11.93
Obesity	67	15.37
3 Varieties of Defects ....Total	135	30.96
Endocrines (not including diabetes).		
Ovaries, hypofunction of	1	0.23
Testicles, hypofunction of	1	0.23
Thryoid, adenoma, simple	1	0.23
Thryoid, adenoma, toxic	8	1.83
Thyroid, colloid goitre	2	0.45
Thyroid, exophthalmic goitre	4	0.92
6 Varieties of Defects ....Total	17	3.90

Extremities.	*No. of Cases*	*Percent of Persons Involved*
Feet, arches weak, not flat	6	1.38
Feet, club, bilateral, corrected	1	0.23
Feet, crippled from trauma	1	0.23
Feet, flat, causing symptoms	9	2.06
Finger, infected	1	0.23
Fingers, scar contracture of	1	0.23
Foot, crippled from trauma	1	0.23
Foot, infected	4	0.92
Foot, multiple fibromata of	1	0.23
Foot, weak metatarsophalangeal joint	1	0.23
Hip, arthritis of, chronic	1	0.23
Knee, arthritis of, chronic	1	0.23
Leg, atrophy of from poliomyelitis	1	0.23
Legs, infected ulcers of	2	0.45
Periostitis of tibia, chronic	1	0.23
Polyarthritis, chronic	1	0.23
Toes, bunions	11	2.52
Toes, congenital deformity of, a family trait—little toe superimposed on 4th toe	1	0.23
Toes, painful corns and calluses	39	8.94
Toes, crowded by tight shoes	8	1.83
Toes hammer	7	1.61
Toes, ingrowing nails	8	1.83
Toes, traumatic ankylosis	1	0.23
Toes, webbed	2	0.45
24 Varieties of Defects.....Total	110	25.23
Nervous System.		
Arteriosclerotic lesion of brain with unilateral paralysis of tongue	1	0.23
Congenital absence of knee jerks	2	0.45
Habit spasm of eyebrow	1	0.23
Hysteria	3	0.69
Insomnia, cause undetermined	1	0.23
Mental deficiency, obvious	2	0.45
Migraine	2	0.45
Neuritis, intercostal	1	0.23
Paranoid Psychosis	1	0.23
Psychic trauma (white woman whose husband was convicted of being father of negro child)	1	0.23
Psychoneurotic personality	2	0.45
Tabes dorsalis	1	0.23
Traumatic neurosis	1	0.23
13 Varieties of Defects.....Total	19	4.36
Harmful Habits.		
Alcoholism, chronic	8	1.83
Bad air at night, windows shut	3	0.69
Excessive childbearing	1	0.23
Excessive coca-colas	12	2.75
Excessive coffee	4	0.92

	No. of Cases	Percent of Persons Involved
Excessive fried food	1	0.23
Excessive hours of work	31	7.11
Excessive tension of work	1	0.23
Excessive sugar in diet	3	0.69
Excessive tobacco	41	9.40
Excessive venery	2	0.45
Improper food	2	0.45
Insufficient exercise	4	0.92
Insufficient food (economic reasons)	1	0.23
Insufficient recreation	4	0.92
Insufficient sleep (due to nature of work not insomnia)	21	4.82
Irregular eating	19	4.36
Morphinism, chronic	1	0.23
Purgative habit	3	0.69
19 Varieties of Defects.....Total	162	37.16
Chronic Malaria. 1 Variety of Defect.	4	0.92
Undiagnosed Conditions.		
Albuminuria, cause undetermined	5	1.15
Dysmonorrhea, cause undetermined	2	0.45
Enlarged veins in upper chest, cause undetermined	1	0.23
Epigastric tenderness with right rectus rigidity	1	0.23
Fatigue, chronic, cause undetermined	1	0.23
Fever of undetermined origin	2	0.45
Hematuria, cause undetermined	1	0.23
Irregular menstruation	1	0.23
Laryngeal trouble, nature undetermined	1	0.23
Lung condition, sounds like general pleural friction without any symptoms or other physical signs	1	0.23
Mass in left hypochondrium of unknown nature	1	0.23
Menorrhagia, cause undetermined	4	0.92
Painful tender cervix—looks normal	1	0.23
Pelvic trouble of undetermined nature	1	0.23
Pulse pressue, low, cause undetermined	1	0.23
Pyuria, cause undetermined	1	0.23
Tachycardia, cause undetermined	2	0.45
Tenderness below left ear, cause undetermined	1	0.23
Tenderness in left hypochondrium, cause undetermined	1	0.23
Tenderness over right mastoid, cause undetermined	1	0.23
Uterus, enlarged and tender, cause undetermined	1	0.23
21 Varieties of Defects.....Total	31	7.11

GENERAL SUMMARY

Defect Group	*No. of Cases*	*Percent of Persons Involved*
Skin	113	25.92
Eye	179	41.06
Ear, Nose, Sinuses, and Throat	142	32.57
Mouth, Teeth, and Tongue	129	29.59
Bronchi, Lungs, and Pleurae	33	7.57
Blood (not including Malaria)	33	7.57
Circulation(including varicose veins of legs)	91	20.87
Postural Defects, Spine, etc. (marked)	33	7.57
Abdomen	110	25.23
Rectum	61	13.99
Urinary Organs	52	11.93
Male Reproductive Organs	70	16.06
Female Reproductive Organs	31	7.11
Metabolism (including glycosuria)	135	30.96
Endocrines (not including glycosuria)	17	3.90
Extremities	110	25.23
Nervous System	19	4.36
Harmful Habits	162	37.16
Chronic Malaria	4	0.92
Undiagnosed, but recognized abnormal	31	7.11
GRAND TOTAL OF DEFECTS FOUND	1,555	

Average number of defects per person	3.57
Lowest number of defects found in any one person	1
Highest number of defects found in any one person	12
Total number of different varieties of defects	259

The first lesson, we learn at a glance, and that is, *the overwhelming need of health examinations.* In 436 apparently health, or almost apparently healthy persons examined, we found 1,555 defects—an average of 3.57 defects per person. A very few defects of no clinical importance were included because they were pathologic curiosities, such, e.g., as a vaccination scar on the abdomen, but in the main, defects recorded are real defects. Deflected nasal septa, e.g., are recorded only where they are obstructive. A summarized classification of defects is given at the end of the tables in Exhibit A, and I am repeating this summary in larger characters on the board marked "Exhibit B," so that you may see it from a distance.

Perhaps the second most obvious lesson, yet one that is a bit surprising until we examine the figures, is the frequency of unusual conditions, if you will pardon the Hibernicism. This is best shown by referring to the table marked.

EXHIBIT C

Total Number of Kinds of Defects Found 259.

No. of kinds defects involving only 1 person (less than 0.25% of those examined)	143
No. of kinds of defects involving 0.25% to 0.50% of those examined	30
No. of kinds of defects involving 0.51% to 1.0% of those examined	26
No. of kinds of defects involving 1.1% to 2.0% of those examined	23

No. of kinds of defects involving 2.1% to 5.0% of those examined..... 22
No. of kinds of defects involving 5.1% to 10.0% of those examined..... 9
No. of kinds of defects involving 10.1% to 20.0% of those examined..... 4
No. of kinds of defects involving 20.1% to 40.0% of those examined..... 2

Here you will note that 259 different kinds of defects were found, and of these 143 affected only one person each—that is, more than one-half of the varieties of defects found were comparatively rare in our experience. Again, of the 259 kinds of defects, 244 each affected less than five per cent of those examined. While it is, of course, common sense to think of the commonest diseases first, these figures indicate the importance of considering also a large number of relatively uncommon conditions in making health examinations.

The fifteen varieties of defects involving over five per cent each of those examined are tabulated in

EXHIBIT D

Defects Involving Over 5% of Persons Examined.

Defect.	*No. of Cases*	*Percent of Persons Involved*
Refractive Errors—Uncorrected or Incompletely Corrected	165	37.84
Dental Infection (Oral Sepsis) of all kinds	123	28.21
Obesity (More than 10% over standard weight)	67	15.37
Tonsils, Chronic Infection of	57	13.07
Hemorrhoids	55	12.61
Malnutrition (More than 10% under standard weight)	52	11.93
Excessive tobacco	41	9.40
Painful corns and calluses of feet	39	8.94
Appendicitis, chronic	35	8.03
Prostate, hypertrophy of	32	7.34
Excessive hours of work (largely among physicians)	31	7.11
Deafness, all grades	30	6.88
Round shoulders, marked	28	6.42
Anemia, secondary	25	5.73
Hypertension, essential	23	5.28

These figures emphasize the great importance of two procedures all too often neglected in routine examination—simple visual tests and rectal examinations.

The most serious *unsuspected* defects found were: 1 case of tobacco amblyopia, 11 cases of active pulmonary tuberculosis, 1 case of pernicious anemia, 1 of subclavian aneurism, several of marked hypertension (some of our cases were known to exist to some degree), 5 cases of myocardial weakness, a considerable number of cases of chronic gall-bladder disease, 3 cases of carcinoma (liver, rectum and a probable one involving the prostate), a number of cases of nephritis, 2 cases of tuberculosis peritonitis, and one of probable tuberculosis of the kidney (intractable pyuria with

hematuria at times in a person with pulmonary tuberculosis). The last named patient considered himself in fair health despite the fact that his urine contained pus whenever he had it examined!

A number of serious defects already known to the patient were also discovered, such as alcoholism, morphinism, general bad habits of a serious nature, chronic gonorrhea of over a year's duration, congenital syphilis, etc.

The two cases diagnosed as congenital absence of the knee jerks had been intensively studied by neurologists many years ago (one of them 20 years ago), and no obvious explanation found, and the lapse of time has produced no further evidence of trouble.

Excessive hours of work and insufficient sleep are, of course, occupational hazards of the practice of medicine, as well as of some other vocations, and as our records include examinations of 77 physicians themselves, these figures are unusually high in our statistics.

The rather low rate of constipation, once called "the great American disease," may be due to the increasing knowledge of dietetic principles, which the home economics departments of our high schools, colleges, womans' club, county demonstrations, etc., are doing so much to disseminate to the great benefit of public health.

We found a surprisingly small number of functional heart murmurs, for which we have no explanation, other than that they are usually more frequent in younger persons than those we examined. Even so, we should have expected to find more, for included in our list were the boys of the Eastern Carolina Training School at Rocky Mount. Uncomplicated mitral regurgitation has recently been shown to be so rare that we look with suspicion on our two diagnoses of that condition. (There were three diagnoses of mitral regurgitation, but the other one was associated with stenosis). Possibly these two cases should be added to the functional murmur group. A low rate of valvular heart disease is to be expected where there is a low incidence of rheumatic fever, as in our state.

We very much regret that we failed to record the number of persons who were unprotected against smallpox and typhoid fever. Such a lack of protection was noted in the record left with the patient's physician. These cases were few, as our patients were of a high average of intelligence. However, the data would be interesting.

We find a surprisingly low rate of insufficient physical exercise. We had to depend on our histories for this factor, and some may have considered an insufficient activity as plenty of exercise.

We record only one case of excessive child-bearing, again because we worked with an exceptionally intelligent group. A much higher rate would doubtless be found among the poor and ignorant.

We found no case of chronic nephritis with edema, probably because it is relatively uncommon, and such patients practically always know they are sick and do not come into the health examination group.

Where flat feet caused no symptoms they were disregarded, and not listed as defects. They are, we believe, normal in many white persons, as well as in nearly all negroes. Only one negro was examined by us, and that was in a special clinic given in conjunction with the colored doctors of Winston-Salem at the colored teachers' college there. The patient examined presented so many points of interest and importance, and the discussion of the problems involved was so general, that the entire afternoon was taken up demonstrating that one patient.

The age and sex incidence of our patients explain why only two cases of colloid goitre were found.

A number of interesting questions arise concerning the association of various defects in the same individual. It is obvious, of course, that in health examination work multiple diagnoses are the rule. We cannot employ the clinical rule that a single diagnosis should usually explain all the symptoms, for there are usually no symptoms to explain—we are looking for things that are not causing symptoms.

Our cases of chronic arthritis are too few to show any data of value regarding the association of focal infection discoverable by ordinary methods of physical examination. So were our cases of angina pectoris, though all three had associated conditions supposed to be of importance—one had focal infection, one had the excessive use of tobacco, and one an undue stress and strain of life.

The majority of our glycosurics were obese, though hardly in the overwhelming majority noted by Joslin, for 5 of the 16 were not overweight. Ten of our 16 nephritics were noted as having some form of focal infection, whereas only 7 of 23 patients having what we considered essential hypertension are so noted. This latter incidence is lower than our general incidence of focal infection, for some form of such infection, including dental caries, was found in 206 of the 436 patients, or 47.2 per cent. Among our five patients with exclusively diastolic hypertension, however, four showed focal infection. This, of course, may be mere coincidence.

Our hypotensive patients were too few to base any conclusions on, but the incidence of focal infection in them did not differ significantly from the general incidence.

These facts would seem to show that, while focal infection is exceedingly frequent, involving almost one-half of middle aged adults, the vast majority of those harboring it do not show evidences of serious visceral or constitutional disease. Further, no definite relation is shown between focal infection and essential hypertension. Chronic nephritis, on the other hand, does seem to have an unusually high incidence of such infection, and as this is a growing factor of importance in our mortality rate, the importance of focal infection should not be underestimated. Moreover, whatever the general rule may be, we have probably all of us seen at least a few cases of essential hypertension and other chronic conditions clear

up after cleaning out infected areas, so we have no warrant whatever to regard focal infection as a harmless process.

One boy was examined in whom we found no physical defects, but he had habit defects bad enough to cause his commitment to the Eastern Carolina Training School, and such defects are just as important from a medical standpoint as ones that have a demonstrable material basis.

Our general conclusions from this study, then, may be summed up as follows:

1. An appalling number of defects exist in our apparently healthy adult population, an average of between three and four per person, in our experience.

2. A very considerable number of these defects are of the utmost significance to life and health.

3. Multiple diagnoses are the rule in health examinations, rather than a single diagnosis—comparatively few of those examined had only one defect noted, and two persons had 12 defects each!

4. The one hundred per cent American from a medical standpoint is probably a mythical creature.

5. A very definite obligation confronts us as a profession, and that is, to regard the periodic examination of apparently healthy persons as one of the most important things in the practice of medicine, and to develop as keen an interest and competent a technic in this field as in any other branch of our art.

APPENDIX

DIAGNOSES OF PATIENTS EXAMINED IN HEALTH MAINTENANCE BUREAU CLINICS

1. Hemorrhoids. (1)
2. Chronic hypertensive nephritis. (1)
3. Eyestrain, lichen planus, eosinophilia. (3)
4. Diabetes mellitus. (1)
5. Diabetes mellitus. (1)
6. Hemorrhoids. (1)
7. Two congenital heart lesions with anemia (Patent ductus arteriosus with pulmonary stenosis?) (3)
8. Arthritis of hip and anemia. (2)
9. Chronic cervicitis and laparotomy adhesions. (2)
10. Hypogonadism, infantilism, and obesity. (3)
11. Chronic infected tonsils. (1)
12. Essential hypertension. (1)
13. Mitral stenosis. (1)
14. Bad habits of eating, eyestrain, infected tonsils, colloid goitre. (4)
15. Hemorrhoids. (1) (very bad)
16. Obesity, abdominal adhesions. (2) (obesity extreme)
17. Obesity and pyorrhea. (2)
18. General bad habits of living—alcohol, tobacco, venery, 8 auto wrecks, etc., and hysteria. Bad eating and lack of sleep. (7)
19. Essential hypertension. (1)
20. Pyorrhea. (1)
21. Dental infection. (1)

22. Displaced uterus. (1)
23. Dental infection and deafness. (2)
24. Hypertrophied prostate, chronic cystitis, purgative habit. (3)
25. Excessive hours of work, pyorrhea. (2)
26. Toxic goitre, myocardial weakness. (2)
27. Anemia from postpartum hemorrhage, extensive dental caries, lacerated cervix, malnutrition. (5)
28. Extreme varicose veins, dental infection. (2)
29. Dental caries, epiplocele. (2)
30. Dental caries, stiff toe (traumatic), deafness. (3)
31. Obesity, excessive hours of work. (2)
32. Infected teeth and tonsils, polyarthritis, obesity. (4)
33. Pyorrhea, secondary anemia. (2)
34. Inguinal hernia, anemia, eosinophilia. (3)
35. Eyestrain, dental caries, inguinal hernia. (3)
36. Eyestrain, anemia. (2)
37. Eyestrain, hemorrhoids, flat feet, deafness. (4)
38. Fever of undetermined origin. (1)
39. Excessive hours of work, eyestrain, pyorrhea, hypertrophied prostate, chronic cystitis, varicocele. (6)
40. Rhus dermatitis, infected tonsils, chronic appendicitis, hyperthyroidism. (4)
41. Salpingitis. (1)
42. Eyestrain, undiagnosed pelvic trouble. (2)
43. Eyestrain, tachycardia of undetermined origin, lacerated perineum, eroded cervix. (4)
44. Anxiety hysteria. (1)
45. Malnutrition, infected tonsils, anemia. (3)
46. Dental caries, hemorrhoids. (2)
47. Infected tonsils, colloid goitre. (2)
48. Dental caries. (1)
49. Pelvic lacerations, retroflexion, fibroid. (3)
50. Pterygia, dental infection, subacute bronchitis, hypertrophied prostate, chronic hypertensive nephritis. (5)
51. Eyestrain, pelvic lacerations, cystitis, pyelitis, antral sinusitis, gall-bladder disease. (6)
52. Deflected nasal septum, dental caries. (2)
53. Hemorrhoids. (1)
54. Pelvic lacerations, cystitis, pyelitis. (3)
55. Dental infection, chronic hypertensive nephritis. (2)
56. Chloasma, albuminuria, cause unknown. (2)
57. Chronic gall-bladder disease. (1)
58. Excessive hours of work, eyestrain, pyorrhea. (3)
59. Excessive hours of work, insufficient sleep, hemorrhoids, secondary anemia, left inguinal hernia, pyorrhea, abdominal adhesions, excessive tobacco, intercostal neuritis. (9)
60. Malnutrition, eyestrain, chronic gall-bladder disease, stricture of rectum. (4)
61. Pelvic lacerations, injured coccyx. (2)
62. Bronchial asthma, infected foot. (2)
63. Toxic adenoma of thyroid. (1)
64. Obesity. (1)
65. Excessive hours of work, hypertension. (2)
66. Excessive toobacco, deflected nasal septum. (2)
67. Obesity, hypertension. (2)
68. Obesity, mucous colitis. (2)

69. Malnutrition, toxic adenoma of thyroid. (2)
70. Eyestrain, weak metatarsophalangeal joint, (little toe), chronic sigmoiditis. (3)
71. Eyestrain, hypertrophied prostate. (2)
72. Excessive hours of work, renal calculus, obesity. (3)
73. Malnutrition, eyestrain, deafness, dental infection, multiple hemangiomata, chronic cystitis. (6)
74. Thickened eardrum, deafness. (2)
75. Obesity. (1)
76. Chronic infected tonsils, malnutrition. (2)
77. Extreme dental sepsis, hpotension. (2)
78. Extreme dental sepsis, hypertrophy of left lobe of prostate. (2)
79. Early pulmonary tuberculosis, laryngeal trouble of undetermined nature, malnutrition, excessive sweets between meals. (4)
80. Eyestrain, chronic infected tonsils. (2)
81. Chronic appendicitis. (1)
82. Excessive tobacco, extreme hemorrhoids. (2)
83. Dental infection, chronic mastoid infection, hemorrhoids. (3)
84. Dental caries, fibroma of breast, eyestrain, eczema of ear, chronic gall-bladder disease. (5)
85. Hypertrophied prostate, traumatic cataract. (2)
86. Obstructed Eustachian tube, retroversion, eroded cervix, hemorrhoids, hyperthyroidism. (5)
87. Eyestrain, chronic antral sinusitis, pelvic lacerations, erosion of cervix, lateral displacement of uterus. (5)
88. Pyorrhea, obesity. (2)
89. Blepharitis, pyorrhea, hemorrhoids, diabetes mellitus. (4)
90. Eyestrain, dental sepsis. (2)
91. Eyestrain, hypertrophied prostate. (2)
92. Infected tonsils, erosion of cervix. (2)
93. Chronic cystitis, pyelitis, strictured ureter. (3)
94. Malnutrition, dental infection, deflected nasal septum, hemorrhoids. (4)
95. Pulmonary tuberculosis. (1)
96. Malnutrition, deafness. (2)
97. Excessive hours of work, dental infection, migraine, vagal attacks. (4)
98. Pyorrhea, obesity, obstructed nose (congenital deformity), eyestrain. (4)
99. Subclavian aneurism, dental sepsis. (2)
100. Pulmonary tuberculosis, excessive coca-colas and tobacco. (3)
101. Chronic infected tonsils, chronic appendicitis. (2)
102. Eyestrain, chronic infected tonsils, obesity, chronic alcoholism. (4)
103. Obesity, varicose veins. (2)
104. Chronic gastritis, cause unknown. (1)
105. Large pigmented nevus of neck, eyestrain, deafness, hemorrhoids, bilateral inguinal hernia. (5)
106. Obesity, hemorrhoids. (2)
107. Irregular eating, excessive coca-colas and tobacco, insufficient sleep, dental caries, deflected nasal septum. (6)
108. Excessice tobacco, scabies. (2)
109. Hypertrophied prostate, painful calluses of feet. (2)
110. Tuberculosis peritonitis, old pulmonary tuberculosis (arrested), eyestrain. (3)
111. Arteriosclerosis, right inguinal hernia, hypertension. (3)
112. Excessive cigarettes, underweight, varicose veins, bronchiectasis (previously diagnosed by X-rays). (4)
113. Chronic appendicitis, pyelitis, evcessive tobacco. (3) Grandson of Siamese twins.
114. Irregular eating(hydrocele of spermatic cord, hypertension prostate, eosinophilia, secondary anemia. (5)

115. Habit spasm of eyebrows, dental infection, chronic tonsilitis, chronic cystitis, hypertension, anemia. (6)
116. Eyestrain, deafness, tender cervix, double uterus (2 external ossa), mass in left hypochondrium of undetermined nature. (5)
117. Eyestrain, chronic gall-bladder disease, arrested tuberculosis. (3)
118. Toxic adenoma of thyroid, chronic eczema, erosion of cervix. (3)
119. Hypotension, eyestrain. (2)
120. Simple adenoma of thyroid, chronic appendicitis, eosinophilia, corns, bunions. (5)
121. Eyestrain, infected tonsils, retroversion, corns, bunions. (5)
122. Dental caries, infected tonsils, corns. (3)
123. Eyestrain, corns, bilateral otitis media. boils. (4)
124. Chronic prostatitis, chronic appendicitis, eyestrain. (3)
125. Eyestrain, obesity. (2)
126. Eyestrain, chronic appendicitis, ringworm of hand. (3)
127. Constipation, diverticulitis. (2)
123. Eyestrain, corns, bilateral otitis media, boils. (4)
129. Chronic cholecystitis, old radium burn, hypofunction of ovaries, eyestrain, corns, bunions. (6)
130. Eyestrain, corns, bunions. (3)
131. Large pigmented mole, spongy gums. (2)
132. Toxic adenoma of thyroid, corns. (2)
133. Eyestrain and badly defective vision. (2) (vision 20/70 both eyes)
134. Dental infection, arrested tuberculosis, left inguinal hernia. (3)
135. Pulmonary tuberculosis, tuberculosis of testicle, tuberculosis cutis, extreme eosinophilia (25%). (4)
136. Calluses of feet, eyestrain. (2)
137. Chronic appendicitis. (1)
138. Eyestrain, large moles, dysmenorrhea with excessive flow, anemia. (4)
139. Dysmenorrhea with excessive flow, anemia, metrorrhagia, chronic rhinitis, constipation. (5)
140. Eyestrain, infected tonsils, retroversion, corns. (4)
141. Eyestrain, dental caries, eczematoid ringworm of toes, irregular menstruation, menorrhagia. (5)
142. Eyestrain, subacute bronchitis, flat feet, corns. (4)
143. Hypertension, scoliosis, corns, anemia, cause unknown. (4)
144. Eyestrain, infected teeth, obesity. (3)
145. Chronic gall-bladder disease, obesity. (2)
146. Exophthalmic goitre, excessive sugar in diet, hypotension, menorrhagia. (4)
147. Toxic adenoma of thyroid, abdominal adhesions, corns, peculiar bodily proportions—thin face, neck, thorax, and abdomen, thick thighs and legs. (4)
148. Obesity, excessive tension of work. (2)
149. Large mole, varicose veins, anemia. (3)
150. Eyestrain, obesity. (2)
151. Scar of old breast amputation for cancer, enlarged supraclavicular nodes, probably recurrent cancer, varicose veins, chronic appendicitis. (4)
152. Malnutrition, eyestrain, pyorrhea, chronic gall-bladder disease, pneumokoniosis. (5)
153. Eyestrain, obesity. (2)
154. Excessive tobacco eyestrain, dental infection, chronic gall-bladder disease, pyelitis, atrophied testicles (mumps). (6)
155. Obesity, pterygium of left eye, eyestrain, hypertrophied prostate, hemorrhoids. (5)
156. Bad habits of eating, tobacco heart, dental sepsis, eyestrain, cholecystitis. (5)
157. Dental infection, eyestrain, multiple fibromata and moles. (4)

158. Convalescence from gall-bladder and appendix operation, malnutrition, eyestrain. (3)
159. Infected tonsils, bronchial asthma, deafness left ear, sycosis vulgaris. (4)
160. Deafness, deflected nasal septum, dental infection, acne vulgaris. (4)
161. Crippled feet, obesity. (2)
162. Insomnia, malnutrition, lupus erythematosus, dental caries, undiagnosed condition in lungs, (general friction sound without anything else), chronic appendicitis. (6).
163. Obesity, varicose veins, chronic cystitis. (3)
164. Excessive hours of work and cigarettes, many nevi, atrophy of testicle (mumps) varicocele, corns, dental infection, cystitis. (8)
165. Purgative habit, dental caries, infected tonsils, prostatitis, tight shoes, hammer toes. (6)
166. Diabetes mellitus, eyestrain, ruptured eardrum, phimosis. (4)
167. Malnutrition, subacute rheumatic endocarditis. (2)
168. Eyestrain, infected tonsils, moles, hemorrhoids, pyelitis. (5)
169. Strictured ureter, anemia. (2)
170. Obesity, excess tobacco, chronic appendicitis. (3)
171. Tendency to prolapse of rectum. (1)
172. Obesity, tinea of axillae, groin, and feet. (3)
173. Tinea versicolor, hypertrophied prostate, chronic appendicitis. (3)
174. Chronic fibroid phthisis, chronic gastritis, chronic appendicitis, chronic cystitis, bunion of left foot, probable median bar enlargement of prostate. (6)
175. Excessive tobacco, left antral sinusitis. (2)
176. Deflected nasal septum, chronic gall-bladder disease, fibroid of uterus. (3)
177. Eyestrain, right apical tuberculosis, chronic appendicitis, bunions, bilateral club feet, excessive tobacco. (6)
178. Obesity, eyestrain, chronic hypertensive nephritis, rectal polyp, fibroma of foot, weak arches. (6)
179. Phimosis, cystitis, excessive coca-colas, excessive hours of work, pyorrhea, fibromata of skin. (6)
180. Malnutrition, eyestrain, pyorrhea, chronic nasopharyngitis, vasomotor instability, chronic appendicitis. (6)
181. Eyestrain, traumatic neurosis. (2)
182. Possible bilateral hydronephrosis, low pulse pressure (16), tachycardia of unknown origin. (3)
183. Excessive alcohol and tobacco, obesity, pterygia, coryza. (5)
184. Chronic appendicitis. (1)
185. Eyestrain, dental caries, hemorrhoids. (3)
186. Obesity, pyorrhea, emphysema, arrested tuberculosis, arteriosclerotic lesion of brain with paralysis of left side of tongue. (5)
187. Excessive tobacco, malnutrition, probable pernicious anemia, hypertension, prostate. (4)
188. Excessive hours of work, insufficient sleep, excessive tobacco, obesity, hemorrhoids, cirrhosis of liver, hammer toes. (7)
189. Excessive hours of work, insufficient sleep, pyorrhea, infected tonsils, varicose veins, hypertrophied prostate. (6)
190. Malnutrition, pyorrhea, chronic infected tonsils, chronic fibroid phthisis, hammer toes, corns, weak arches, eyestrain. (8)
191. Arrested tuberculosis (old mustard gas case), chronic appendicitis, eyestrain. (3)
192. Excessive hours of work, insufficient sleep, right inguinal hernia, eczematoid, ringworm of feet, corns. (5)
193. Excessive coca-colas, obesity, dental infection, diabetes mellitus, tinea versicolor. (5)

194. Obesity, hypertension, chronic infected tonsils, pyorrhea, chronic hypertensive nephritis, eczematoid ringworm of toes. (5)
195. Irregular eating, excessive sugar, left pterygium, hemorrhoids, infected tonsils. (5)
196. Too many interests, eyestrain, underweight, uterine displacement, corns, acute coryza, chronic gall-bladder disease. (7)
197. Obesity, spastic constipation, hemorrhoids, bunions, corns. (5)
198. Malnutrition, spastic constipation, hemorrhoids, anemia. (4)
199. Insufficient recreation, eyestrain, chronic infected tonsils, arrested tuberculosis, varicose veins, chronic gall-bladder disease. (6)
200. Malnutrition, insufficient food, dental caries, eyestrain, lacerated cervix, antral sinusitis, infected tonsils, excessive childbearing, anemia from miscarriage, bad air at night. (10)
201. Malnutrition, eyestrain, chronic appendicitis, bunions. (4)
202. Obesity, diabetes, corns, essential hypertension. (4)
203. Pansinusitis, exophthalmic goitre, corns. (3)
204. Eystrain, varicose veins, hemorrhoids. (3)
205. Obesity, acute myringitis, corns. (3)
206. Malnutrition, chronic cystitis. (2)
207. Malnutrition, eyestrain. (2)
208. Malnutrition, hemorrhoids, anemia. (3)
209. Diverticuitis, eyestrain, exophthalmic goitre, hypertension. (4)
210. Tinea of skin, fibroma of abdominal wall. (2)
211. Purgative habit, anemia, hypertension. (3)
212. Chronic glaucoma, frontal sinusitis, bunions. (3)
213. Insufficient sleep, excessive hours of work, pyorrhea, sclerosis of testicle, (mumps), hemorrhoids, varicose veins, hypertension. (7)
214. Eyestrain, malnutrition, pyorrhea, arrested tuberculosis, hemorrhoids, anemia. (6)
215. Eyestrain, eczematoid ringworm of feet. (2)
216. Malnutrition, eyestrain, ingrowing toenails, hemorrhoids. (4)
217. Eyestrain, dental caries, left pyosalpina, anemia. (4)
218. Eyestrain, cystocele, lacerated cervix, cystitis, pyelitis, corns, bunions, weak arches, eosinophilia. (9)
219. Excessive hours of work and cigarettes, insufficient sleep, malnutrition, tabes dorsalis, arrested tuberculosis, pyuria. (7)
220. Obesity, novocain dermatitis, eczematoid ringworm of toes. (3)
221. Unbalanced diet, excessive cigarettes, unilateral deafness, pleuropericardial adhesions. (4)
222. Eyestrain, pyorrhea, hemorrhoids, corns and calluses of feet. (5)
223. Eyestrain, dental sepsis, lax abdominal walls, abdominal adhesions, hemorrhoids. (5)
224. Dental infection, hypertrophied prostate. (2)
225. Excessive cigarettes, deaf in right ear, bad round shoulders, flat feet, ingrowing toenails. (5)
226. Excessive hours of work and tobacco, insufficient sleep, inguinal hernia, chronic gall-bladder disease, hard tender prostate. (6)
227. Excessive tobacco, chronic infected tonsils, eosinophilia. (3)
228. Obesity, eyestrain, dental infection, renal calculus, corns. (5)
229. Obesity, multiple fibromata, anemia. (3)
230. Hypertrophied prostate, hemorrhoids, right inguinal hernia, varicose veins, hammer toes. (5)
231. Undeveloped optic nerve, acne vulgaris, excessive tobacco, right inguinal hernia, hammer toes. (5)
232. Obesity, pyuria. (2)
233. Excessive tobacco, malnutrition, eyestrain, dental infection, enlarged tonsils, corns, bunions. (7)

234. Chronic appendicitis, hypertrophied prostate. (2)
235. Dental infection, glass eye, testicles gone (removed for tuberculosis), cirrhosis of liver, chronic appendicitis. (5)
236. Excessive tobacco, malnutrition, dental caries, mitral regurgitation, angina, angina pectoris. (5)
237. Excessive tobacco, malnutrition, chronic appendicitis, corns, chronic cystitis. (5)
238. Eyestrain, pterygia, chronic infected tonsils, dental infection, strained arch of right root, pyelitis, renal calculus. (7)
239. Paroxysmal tachycardia, chronic appendicitis, hemorrhoids, varicose veins, dental infection, diabetes mellitus. (6)
240. Eyestrain, wen of scalp, pyorrhea, hypertrophied prostate, chronic appendicitis, hemorrhoids, crowded toes, corns. (8)
241. Chronic infected tonsils, chronic appendicitis. (2)
242. Eyestrain, chronic infected tonsils, dental infection, excessive hours of work, insufficient sleep. (5)
243. Obesity, pyorrhea, hypertrophied prostate. (3)
244. Eyestrain, pulmonary tuberculosis, mitral regurgitation, inguinal hernia, webbed toes. (5)
245. Excessive hours of work, dental infection, hypertrophied prostate. (3)
246. Malnutrition, dental caries, pulmonary tuberculosis. (3)
247. Eyestrain, chronic gall-bladder disease, weak arches, glycosuria. (4)
248. Malnutrition, acne vulgaris, chronic infected tonsils, corns. (4)
249. Obesity, chronic gall-bladder disease. (2)
250. Malnutrition, dental infection, chronic hypertensive nephritis, hypertrophy of heart, salpingitis, pelvic cellulitis, lacerated cervix, varicose veins, psychic trauma (husband convicted of being father of negro baby). (9)
251. Dental infection, hypertrophied prostate. (2)
252. Dental infection. (1)
254. Eyestrain, tinea versicolor, fibroma of skin, chronic appendicitis, atrophy of right testicle (mumps), dental infection. (6)
255. Corns, cramped toes, eyestrain. (3)
256. Malnutrition, dental infection, functional gaseous distention of abdomen. (3)
257. Acute laryngitis, chronic appendicitis, eczematoid ringworm of toes. (3)
258. Acne rosacea, large pigmented mole, hypertrophied prostate, sunburn. (4)
259. Deflected nasal septum, dental caries, hypertrophied prostate, flat feet. (4)
260. Excessive tobacco, chronic appendicitis. (2)
261. Eyestrain, chronic fatigue, dental caries, corns. (4)
262. Obesity, fibroma of back, right inguinal hernia, eczematoid ringworm of toes. (4)
263. Excessive tobacco, ingrowing toenail. (2)
264. Unbalanced diet, eyestrain, infected tonsils, bilateral salpingitis. (4)
265. Carcinoma of rectum. (1)
266. Dental infection, acute coryza, flat feet, hemorrhoids. (4)
267. Stye, dental infection, chronic infected tonsils, corns, umbilical hernia. (5)
268. Excessive coffee, bilateral deafness, bilateral inguinal hernia, glossitis, squamous eczema, chronic prostatitis. (6)
269. Eyestrain, dental caries, prostatitis, chronic cystitis. (4)
270. Myocardial weakness, extrasystoles, chronic fibroid phthisis, subacute appendicitis. (4)
271. Excessive coca-colas and tobacco, eyestrain, dental caries, chronic infected tonsils, arested tuberculosis, left inguinal hernia, hypertrophied prostate, glycosuria, hammer toes. (10)
272. Chronic dental infection, Raynaud's disease, eyestrain, anxiety neurosis. (4)
273. Excessive alcohol and tobacco, insufficient outdoor exercise, hypotrophied prostate, ingrowing toenails. (5)

274. Excessive work, insufficient sleep, large amount of wax in ears, deaf in left ear, acute pharyngitis, thickened right pleura, eczematoid ringworm of toes, hemorrhoids. (8)
275. Enlarged tender uterus—cause undetermined, cystocele, eyestrain. (3)
276. Excessive tobacco, obesity, diastolic hypertension, chronic appendicitis, excessive work, insufficient sleep. (6)
277. Atrophy of right testicle (mumps), hemorrhoids. (2)
278. Granular pharyngitis, hypertrophied turbinates. (2)
279. Obesity, dental caries, essential hypertension, hypertrophy of heart, hemorrhoids, flat feet. (6)
280. Deaf in left ear, dental caries, chronic constipation, sick headaches, corns, diastolic hypertension, sacroiliac strain. (7)
281. Arteriosclerosis, obesity. (2)
282. Malnutrition, too much work and little sleep, spastic constipation, chronic morphinism, chronic nephritis with hypertension, chronic infection of tonsils, excessive tobacco, coca-cola, and coffee, multiple hemangiomata and fibromata of skin. (12)
283. Obesity, chronic hypertensive nephritis, wen of scalp. (3)
284. Deaf in right ear, dental infection, kyphosis, arrested right apical tuberculosis, surgical kidney (tb.?) with hematuria and secondary anemia, varicose veins of left leg. (7)
285. Excessive alcohol, eyestrain, urethral stricture, pyuria. (4)
286. Hypertension, ingrowing toenails, pyorrhea, early tabes dorsalis. (4)
287. Abdominal adhesions. (1)
288. Excessive tobacco, obesity, pyorrhea, vitiligo, multiple fibromata of skin, eczematoid ringworm of toes, chronic gall-bladder disease. (7)
289. Eyestrain, hypotension, insufficient exercise and recreation, hypertrophied prostate, sacroiliac strain. (6)
290. Malnutrition, deaf in left ear. (2)
291. Too much work and little sleep, angina pectoris. (3)
292. Excessive coffee and alcohol, chronic infection of tonsils, intercostal neuritis, arteriosclerosis, hypertension. (6)
293. Too much work and little sleep, excessive cigarettes, eyestrain, hemorrhoids, chronic malaria. (6)
294. Bad dental infection, angina pectoris, obesity. (3)
295. Hypertrophied tonsils, round shoulders, acute cold. (3)
296. Bad eyestrain, malnutrition, hypertrophied and infected tonsils, phimosis. (5)
297. Chronic hypertensive nephritis, chronic infection of tonsils. (2)
298. Eyestrain, marked asymmetric pigion breast. (2)
299. Slightly deaf in right ear, hypertrophied tonsils and adenoids, phimosis. (4)
300. Chronic infection of tonsils. (1)
301. Eczematoid ringworm of toes and groin, obesity, chronic hypertensive nephritis, fever of undetermined origin. (5)
302. Eyestrain, infected tonsils, arrested tuberculosis. (3)
303. Infected tonsils, eyestrain. (2)
304. Eyestrain, infected foot. (2)
305. Infected foot, atrophy of leg from old polio. (2)
306. Eyestrain, infected tonsils. (2)
307. Severe acne, large moles, chronic appendicitis. (3)
308. Eczematoid ringworm of toes, round shoulders. (2)
309. Round shoulders, eyestrain. (2)
310. Eyestrain, slightly deaf in left ear, infected tonsils, cystitis, nephritis, hydrocele of spermatic cord. (6)
311. Astigmatism and pyorrhea. (2)

312. Deaf in left ear, phimosis. (2)
313. Slightly deaf in left ear, infected tonsils, round shoulders. (3)
314. NO PHYSICAL DEFECTS FOUND. Several bad defects in habits—enough to cause commitment to Eastern Carolina Training School.
315. Badly stained teeth. (1)
316. Eyestrain, hypertension, round shoulders, scabies, bad phimosis. (5)
317. Constipation, malnutrition, hypertrophied and infected tonsils, eyestrain. (5)
318. Broken incisor tooth. (1)
319. Infected tonsils, extensive scarring of left arm and chest from electric burn, crowded toes. (3)
320. Eyestrain, large mole, accidental vaccination scar on abdomen. (3)
321. Pyorrhea, large moles, infected finger. (3)
322. Malnutrition, eyestrain, dental caries, hypertrophied and infected tonsils, tinea versicolor. (6)
323. Infected tonsils, ingrowing toenails. (2)
324. Dental caries, ingrowing toenails. (2)
325. Hypertrophied tonsils, infected scratches on legs. (2)
326. Astigmatism, pyorrhea, corn, tender below left ear—cause undetermined. (4)
327. Pyorrhea, tachycardia of uncertain origin—probably psychoneurotic. (2)
328. Glycosuria, astigmatism. (2)
329. Astigmatism, glycosuria, albuminuria—cause undetermined, infected remains of tonsils supposed to have been removed. (4)
330. Round shoulders, phimosis, infected sore on left ankle, chronic malaria. (4)
331. Eyestrain, greatly hypertrophied and infected tonsils, glycosuria, albuminuria, dental infection. (6)
332. Acute cold, pyorrhea. (2)
333. Infected tonsils, dental caries, acne, crowded toes. (4)
334. Eyestrain. (1)
335. Obesity, hypertension. (2)
336. Eyestrain. (1)
337. Eyestrain, enlarged veins in upper part of chest—cause undetermined, crowded toes. (3)
338. Round shoulders, crowded toes. (2)
339. Eyestrain, chronic appendicitis, elongated prepuce, infected foot. (4)
340. Eyestrains. hypertrophied and infected tonsils, round shoulders. (4)
341. Round shoulders, many moles, acute nephritis. (3)
342. Mitral regurgitation, round shoulders, multiple fibromata of right foot, eyestrain, mental deficiency. (5)
343. Eyestrain, round shoulders, infected tonsils. (3)
344. Eyestrain, chapped lips, mental deficiency. (3)
345. Eyestrain, tenderness over right mastoid, cause undetermined, infected tonsils. (3)
346. Eyestrain, congenital syphilis. (2)
347. Hypertrophied tonsils. (1)
348. Eyestrain, pyorrhea, deaf in left ear, round shoulders, eczematoid ringworm of toes, crowded toes. (6)
349. Round shoulders, crowded toes. (2)
350. Infected tonsils, adenoids, nephritis. (3)
351. Round shoulders. (1)
352. Infection of face, boil on forearm. (2)
353. Round shoulders, eyestrain. (2)
354. Round shoulders. (1)
355. Round shoulders, acne. (2)
356. Round shoulders. (1)

357. Eyestrain, varicose. (2)
358. Infected tonsils broken teeth. (2)
359. Eyestrain, scar contracture of fingers. (2)
360. Excessive coca-colas, acne, crowded toes, corns. (4)
361. Glycosuria, eyestrain, obesity. (3)
362. Sleeps with windows shut, too much greasy food, obesity, antral sinusitis, pyorrhea, eyestrain, diastolic hypertension, hypertrophied prostate. (8)
363. Obesity, too much work and little sleep, chronic appendicitis. (3)
364. Dental infection, eyestrain, round shoulders, multiple fibromata of skin, left inguinal hernia, hemorrhoids, chronic nephrits. (7)
365. Eyestrain, dental infecton, hypertension, lipoma of back, atheroma of aorta, corns. (6)
366. Obesity, eyestrain, hypertrophied prostate, eczematoid ringworm of toes. (4)
367. Excessive cigarettes, infected tonsils, acne. (4)
368. Eyestrain, multiple fibromata of skin. (2)
369. Needs typhoid vaccine, chronic appendicitis. (2)
370. Eyestrain, obesity, excessive hours of work. (3)
371. Obesity, eyestrain, diastolic hypertension, crippled right foot (trauma). (4)
372. Too much work and little sleep, malnutrition, eyestrain, left antral sinusitis, dental caries, chronic gall-bladder disease, right inguinal hernia. (8)
373. Excessive alcohol and cigarettes, slightly deaf in left ear, dental infection, corn, exophthalmic goitre. (6)
374. Arteriosclerosis, hypertrophied heart, chronic hypertensive nephritis, hemorrhoids, tobacco amblyopia. (5)
375. Too much work and little recreation, eyestrain, flat feet, ingrowing toenails, hypertension. (6)
376. Eyestrain, round shouldered, corns. (3)
377. Obesity, multiple hemangiomata of skin, hemorrhoids, varicose veins, hypertension, tenderness in left hypochondrium—cause undetermined. (6)
378. Excessive cigarettes, eyestrain pyorrhea, thickened pleura, arrested tuberculosis, chronic malaria, varicose veins. (7)
379. Eyestrain, obstructive spur on nasal septum, hemorrhoids, varicose veins. (4)
380. Eyestrain, callus of foot, malnutrition. (3)
381. Hypertension, multiple hemangiomata of skin, hemorrhoids, eyestrain. (4)
382. Needs smallpox vaccination, obesity, pyorrhea. (3)
383. Paranoid psychosis of some type (examination incomplete). (1)
384. Deaf in right ear, chronic gall-bladder disease, hypertension. (3)
385. Arteriosclerosis, multiple lipomata of skin, very bad hemorrhoids. chronic arthritis of knee—cause undetermined. (4)
386. Eyestrain, round shoulders, left antral sinusitis, hypertrophied prostate, acute cystitis. (5)
387. Insufficient sleep, perforated nasal septum, acute left frontal sinusitis, deaf in right ear, myocardial weakness from recent influenza, (declined rectal and genital examination). (5)
388. Excessive coca-colas and cigarettes, eyestrain, dental infection, round shoulders, chronic appendicitis, bad hemorrhoids. (7)
389. Excessive work, eyestrain, enlarged inferior tubrinate, emphysema, obesity, congenital absence of knee-jerks (noted 20 years ago by neurologist who, after prolonged study, made diagnosis of "damned curiosity"). (6)
390. Malnutrition, unbalanced and improper diet, deaf in right ear, blind in right eye with external strabismus, dental infection, hypertrophied prostate, weak arches in feet. (8)
391. Excessive tobacco., malnutrition, sebaceous cyst of back. (3)
392. Excessive alcohol and tobacco, keratotic spot on neck, varicocele, eyestrain. (5)

393. Excessive hours of work, malnutrition, hypertrophied prostate, ingrowing toenail, deaf in left ear. (5)
394. Insufficient exercise, albuminuria probably due to recent influenza, multiple hemangiomata of skin, slight hypertension. (4)
395. Too much work and little sleep, chronic constipation, anal fissure, subacute tracheobronchitis due to recent influenza, eczematoid ringworm of toes. (6)
396. Excessive work, coffee, and coca-cola, chronic pharyngitis and blepharitis, eyestrain, atrophied testicle due to mumps, chronic appendicitis, hemorrhoids. (9)
397. Too much work and coca-colas, too little sleep and recreation, hematuria of unknown origin, chronic periostitis of tibia. (6)
398. Excessive work, hypertension, functional heart murmur, fistula in ano. (4)
399. Bad eyestrain and dental infection, chronic appendicitis, bunions, hemorrhoids. (5)
400. Excessive tobacco, eyestrain, pigmented fibromata of skin, dental infection. (4)
401. Excessive coca-colas and tobacco, chronic constipation, eyestrain, tomato eruption, myocardial weakness. (6)
402. Pyorrhea, obesity, large moles, elongated prepuce, hemorrhoids, psychoneurotic personality. (6)
403. Fibroma of skin near anal margin, corns, hammer toe. (3)
404. Obesity, renal calculus, varicocele. (3)
405. Right antral sinusitis, chronic gall-bladder disease, hemorrhoids, excessive fried food, slight deafness in both ears. (5)
406. Chronic hypertensive nephritis, refractive error, round shoulders, pyorrhea, secondary anemia, bad pigmented moles, hypertrophied prostate, hemorrhoids. (8)
407. Astigmatism, albuminuria—cause unknown, fibroma of left arm. (3)
408. Too much work and little sleep, refractive error, psoriasis, extrasystoles, jagged teeth. (6)
409. Malnutrition, eczematoid ringworm of toes, hemorrhoids, constipation. (4)
410. Elongated uvula, needs typhoid vaccine, obesity, glycosuria, anemia, cause undetermined. (6)
411. Refractive error, multiple hemangiomata of skin, corns. (3)
412. Eyestrain, pyorrhea, webbed toes. (3)
413. Pyorrhea, crowded toes, hemorrhoids, eyestrain. (4)
414. Obesity, refractive error, moles, eczematoid ringworm of toes. (4)
415. Malnutrition, refractive error, atheroma of aorta, arteriosclerosis. (3)
416. Lipoma of neck, eczematoid ringworm of toes, refractive error. (3)
417. Malnutrition, round shoulders, bilateral cataract (?), hemorrhoids. (4)
418. Excessive tobacco, fibroma of neck, hemorrhoids, congenital deformity of toe—family trait—little toe superimposed on 4th toe. (4)
419. Refractive error, adenoids, round shoulders, malnutrition. (4)
420. Refractive error, malnutrition, round shoulders. (4)
421. Obesity, dental infection, keratotic moles, crowded toes. (4)
422. Glycosuria, hypertension, extrasystoles, right inguinal hernia. (4)
423. Excessice coca-colas and cigarettes, astigmatism, many moles, hypertrophied and infected tonsils. (6)
424. Obesity, hypertension, moles, hemorrhoids. (4)
425. Fibroma of skin, sleeps with windows shut, bilateral inguinal hernia. (3)
426. Excessive cigarettes, chronic constipation, hemangioma of glans penis, varicose veins of legs. (4)
427. Round shoulders, deficient sleep and exercises, irregular habits of eating excessive alcohol, cigarettes, and venery, malnutrition, dental infection, astigmatism, chronic gonorrhea. (11)
428. Multiple punctuate hemangiomata of skin, moles, refractive error, round shoulders, chronic prostatitis. (5)

429. Needs smallpox vacination, large moles, flat feet, albuminuria cause undetermined, obesity. (5)
430. Obesity, refractive error, dental infection, chronic appendicitis, hemorrhoids, hydrocele of spermatic cord. (6)
431. Refractive error, acne vulgaris, epigastric tenderness with right rectus rigidity—cause undetermined. (3)
432. Dental infection, chronic gall-bladder disease, bad varicose veins of legs. (3)
433. Diastolic hypertension, bilateral deafness, dental infection, eczema of buttocks, eczematoid ringworm of toes, myocardial weakness, secondary anemia. (7)
434. Hypertension, pyorrhea, multiple fibromata of skin, adherent prepuce. (4)
435. Hypertension, infected tonsils, bilateral deafness, refractive error, eczematoid ringworm of toes, chronic gall-bladder disease. (6)
436. Refractive error. (1)

DISCUSSION

Dr. Taylor, closing discussion: Mr. Chairman, it is always difficult to have any fixed limits. When you have any arbitrary standard, of course, we realize this: What is one man's meat is another man's poison; that some people are hypersensitive, and that a single cigarette is probably a very serious thing for a few persons with tobacco asthma or something of that sort, and, on the other hand, some people are able to get away with what would be a very serious drain upon the physique of the majority of persons apparently with impunity. We have tried to strike simply an average, and we say anything over a half-pack of cigarettes a day constitutes a certain amount of excess; anything over a pack of cigarettes a day constitutes a considerable excess, and two packs a day constitutes a very great excess. That is merely arbitrary. I can't argue with anybody on the matter because for some men less than half a pack would be excess, and some might be able to smoke a pack a day with no apparent harm. Dr. Wingate Johnson has done some excellent work on the effect of tobacco on hypertension which I think we are going to hear.

There are a few questions which have come up regarding these health examinations in various parts of the state that I would like to mention in closing this discussion. What is going to be the effect of these examinations in the production of anxiety neuroses? Some of you may have seen a little skit (I think it was published in the *Saturday Evening Post*, or *Collier's*—one of our national magazines) of a man going in to see his physician friend for a health examination. He was sitting up on top of the world and never felt better in his life, and walked in for his health examination on his birthday in very high spirits, and he came out a nervous wreck.

Are these health examinations going to produce anxiety neuroses? My answer is unqualifiedly yes and no, according to the man making them and according to the patient. It will differ in no way from the practice of medicine. There is a type of physician—very rare, fortunately—who every time he sees a patient will tell him about how so-and-so had the same condition and finally it progressed and went into this, that, and the

other thing, and he is dead now, poor fellow. Well, he is going to create an anxiety neurosis at the bedside of the sick patient and also when he makes a health examination.

There is a doctor who is a Pollyanna type, who says "Peace, peace," when there is no peace, and to whom everything is always lovely. There aren't any defects, there is nothing the matter with anybody. He ought to quit practicing medicine and go to the job of being a Christian Science healer; that is where he belongs.

But the man who tries to evaluate things and not only considers the question of what kind of a disease the patient has got but the equally important question of what kind of a patient the disease has got, can do a great deal of good in this work. We must never forget that second phase —what kind of a patient has the disease got?

My revered teacher, Dr. M. Howard Fussell—there are many of you here who knew him; there are perhaps some who do not know him, but if there be any such in this room I can say simply that when Osler lived in Philadelphia Dr. Fussell was Osler's family physician; more I need not say—said, "Always tell your patients the truth. *Don't* tell a patient with a compensating mitral lesion that he has heart disease and stop there, or you will give him the utterly *false* impression that he has a dynamite bomb inside of him which is liable to blow up at any moment. Tell him he has some impairment of his heart, but show him that with proper care, if he will live down to the level of the strength of his heart muscle, he has reasonably good expectancy for life, liberty, and the pursuit of happiness.

Fussell himself was a living example of that fact. He lived a long life. He had an exceedingly large and active practice. He was a very active, keen, enthusiastic teacher. He went on until he was past seventy years of age and then fell dead of heart disease in the train.

I think that is all I have to say. (Applause.)

Chairman Nesbit: The next paper is "Tobacco Smoking and Blood Pressure," by Dr. Wingate M. Johnson, of Winston-Salem.

Dr. Johnson read his prepared paper, the title of which he changed to "Tobacco Smoking—A Clinical Study."

TOBACCO SMOKING—A CLINICAL STUDY

By Wingate M. Johnson, M.D., Winston-Salem

Ever since Sir Walter Raleigh's servant saw his master smoking and poured a bucket of water over him to put out the fire, the habit of tobacco smoking has had enough metaphorical cold water poured over it to make Niagara Falls a mere brook by comparison. Among some recently discovered letters of John Adams,[1] second president of the United States, to Benjamin Waterhouse, then Professor of Physics, at Harvard University, was one commending him for a pamphlet he had written on the harmful effects of tobacco. Mr. Adams confessed, however, that he had been using it himself for sixty years, but said, "I am unable to take into my mouth a

morsel no larger than a Swan Shot without sensible and immediate injury. One quarter of the quantity I have used in some parts of my life, I fully believe would now kill me immediately." As he lived to the mature age of ninety-one, it would seem that his fear of the weed was not wholly justified.

In contrast to his opinion is that of Granny Rachel Riddle, who died about a year ago in Yancey County, at the age of 109. According to her statement, she began smoking at the age of eight and kept it up for one year more than a century. When asked her opinion, she declared, "Baccy is good for the health." And none were so bold as to deny her statement.

Three years ago, in preparing a paper on low blood pressure, I became interested in the effect of tobacco upon the blood pressure, largely because of the different opinions expressed by competent authorities. From this paper I quote,[2]"As to tobacco, opinions vary still more widely."Sir Lauder Brunton[3] is quoted as stating that "anybody who presents no signs of tuberculosis and every evidence of health otherwise, but who nevertheless carries a blood presure of 100, is an excessive smoker in nineteen out of twenty cases." On the other hand Sir Humphrey Rolleston,[3] Regius Professor of Medicine at Cambridge University, asserts that smoking raises the blood pressure. The same view is taken by Osborne[4] of Yale, in his excellent monograph, "Disturbances of the Heart." So keen an observer as Riesman,[5] says, "In hypertension I am opposed to the use of tobacco much more than I am to the use of alcohol." But Sir Clifford Allbutt,[3] who did not use tobacco himself, thought the influence of tobacco in hypertension was negligible."

About tobacco, as is true of alcohol, it seems hard for the most level-headed scientist to think without bias; how much less can the average man be expected to be free from prejudice. Those who use it see no harm in it, while the non-user often tries to reform his brother, willy-nilly. Perhaps the majority of its devotees have a suspicion that it is not good for them, but like it nevertheless. Their attitude has been expressed by one of their poetically inclined number thus—

Tobacco is a vile weed:
I like it.
It serves no earthly human need:
I like it.
It makes you thin and long and lean:
It takes the hair right off your bean,
It's the durndest stuff I've ever seen:
I like it.

In an effort to find out clinically, if possible, just what effect smoking tobacco has upon the human body, especially upon the blood pressure, I began recording the blood pressure, together with the age, height and weight, of all the white male non-smokers I could find, and comparing them with a similar number of smokers. The only men I took for each

group were above twenty years of age and so far as I could judge, free from any acute disease, valvular heart trouble, syphilis, tuberculosis, or deformity. After more than two years effort, I have 150 in each group, with at least 20 in each decade from 20 to 60, and above 60.

As I have never smoked myself, and yet make my living in a city that was built primarily upon the tobacco industry, I think I can be considered about as unbiased as any observer could be. In making up my groups, I have endeavored to be as absolutely fair to both sides as possible. Only those were listed who smoked regularly or not at all. The man who smoked two or three times a week was not counted either way. Those who chewed, but did not smoke, were not counted. The left arm was used in every case, to obviate the possible variation between the two arms noted by some recent observers. The same instrument, a Tycos, repeatedly checked with a mercury instrument, was used, and the same individual, myself, took all the readings except a few furnished me by Bennett Pool. He matched an equal number of smokers against non-smokers, however, so that the general average should not be affected by the personal equation.

The results are tabulated by decades thus:

SMOKERS—AVERAGE

Age Group	*Number*	*Age*	*Systolic Pressure*	*Diastolic Pressure*	*Height*	*Weight*
20-29	30	24.6	120.83	73.73	69.83	155.06
30-39	38	34.34	120.79	77.21	69.34	160.10
40-49	36	43.69	128.22	79.94	69.86	174.54
50-59	26	53.96	135.92	83.84	68.61	165.34
60 +	20	68.85	143.5	81.30	69.25	166.65
All Ages	150	42.63	128.23	78.87	69.24	164.44

NON-SMOKERS—AVERAGE

Age Group	*Number*	*Age*	*Systolic Pressure*	*Diastolic Pressure*	*Height*	*Weight*
29-30	37	24.64	121.91	73.83	69.78	152.62

30-39	38	34.13	120.57	76.15	69.31	162.26
40-49	27	42.88	125.73	81.81	69.37	170.74
50-59	24	53.75	134.95	81.37	69.54	166
60 +	24	70.62	154.95	86.5	67.79	156.5
All Ages	150	42.41	129.64	79.23	69.23	161.08

From this table, it is hard to escape the conclusion that the effect of tobacco smoking upon the blood pressure is practically negligible, except possibly in the group of men past sixty. In these the average systolic pressure is nearly eleven points higher and the diastolic pressure five points higher in the non-smokers than in the smokers. The average age is two years greater, however, which would account for some difference. The lower blood pressure in the smokers would suggest the possibility of some weakening of the myocardium after the prolonged use of tobacco—though, as the average age of these old gentlemen is practically the Biblical limit, this does not seem very probable.

One odd feature about this table is the fact that the systolic pressure for the 30 to 39 group is slightly lower than for the 20 to 29 group. The difference is very slight, but one would naturally expect an increase. My own theory is that the older group included a much larger proportion of the victims of the severe influenza epidemic that raged in 1918 and has since returned annually with steadily decreasing virulence.

Another result of my observations is to contradict the popular idea that smoking will keep an individual's weight down, and that smokers, as a class, are thinner than non-smokers. In my series, the average weight of the smokers is slightly greater in every group but two, and the average weight of all the smokers is 164.44, against 161.08 for the non-smokers. This upsets the old, old idea that "smoking keeps a man thin," and contradicts the advice recently broadcasted to "reach for a cigarette instead of a sweet."

Another study I have made concerns the tobacco habit as an etiological factor in angina pectoris. Practically all authorities take it for granted that tobacco is a potent cause of angina, and are unanimous in advising its withdrawal in such cases. For instance, Clendening[6] says, "Tobacco particularly is an originator of attacks. Giving up its use alone may serve to banish attacks." Then he cites the case of one of his

patients who had given up tobacco and remained well for some years, until he "decided to smoke a cigar one evening; two puffs induced an attack in which he died."

In order to determine, if possible, just what proportion of angina victims are smokers, I have been collecting all possible fatal cases of this disease among males, and dividing them according to their tobacco habits. To William Allan and John Berry I am indebted for adding to this number. Altogether I have collected fifty fatal cases. I have purposely taken only fatal cases, to obviate the possible criticism that some heart attacks diagnosed anginal may have been pseudo-angina. If fatal, it may be assumed that they were genuine. I have not included women, for the reason that the proportion of the women in the older generation who smoke is small.

Of these fifty cases, thirty-seven, or 74 per cent, were smokers, who died at an average age of 59.76 years; thirteen, or 26 per cent, were non-smokers, whose average age was 61.23. As three-fourths of these patients were smokers, at first glance it would appear that tobacco does play a part in the etiology of the disease. In order to get some sort of control group for comparison I hit upon the idea of going over our telephone directory, and listing the first two hundred men whose habits I knew. Of the two hundred, I found that 168, or 84 per cent, smoked. Then I asked friends in Charlotte, Greensboro, Raleigh, and Wilmington, to do the same thing. Of the thousand men thus tabulated, 818, or 81.8 per cent, smoked. Comparing the proportion of smokers among angina victims—74 per cent—with the male population of the state in usual health—81.8 per cent—it would seem that smoking confers a slight immunity against angina. I think, however, that the proportion of smokers is rather higher in the young men, which would explain the apparently favorable showing made by the older men in the angina list. While figures are deceptive, it would seem that in this most distressing form of heart disease, tobacco does not play the part of the villian it is usually reckoned to be.

One other observation which is contrary to most authorities concerns the act of smoking. The statement is often seen that the blood pressure rises from five to fifteen points immediately after smoking. A most plausible explanation for the smoking habit has been constructed upon this belief. It is argued that when an individual once smokes, this rise of pressure produces an exhilarating effect. When the pressure falls, the feeling of depression that ensues demands another smoke to boost it again, and so a vicious circle is established.

On the contrary, in a series of twenty individuals tested I found that five of them showed no change, but all the others showed a fall in systolic pressure of four to fourteen mm. and of diastolic of two to twelve mm. The average fall for the whole group was 4.9 systolic, 3.4 diastolic. The group included cigarette, pipe and cigar smokers, the form in which tobacco was used apparently making little difference in the results. When one considers that smoking in the average individual has a soothing

effect is it not natural to suppose that the relaxation produced would naturally lower the vaso-motor tension and bring about a slightly lower pressure?

A phase of tobacco smoking worthy of more than passing interest concerns its effect upon women, especially during pregnancy and lactation. Direful predictions and melancholy statements have been made about the effect of maternal smoking upon the offspring. One physician[7] went so far as to object to the father's smoking in the presence of his wife during pregnancy and lactation, lest she absorb enough nicotine to affect the baby unfavorably. My own observation is too limited to be worth much, but I know of at least four women who smoked freely through pregnancy and afterward, and yet nursed their babies successfully for several months. I do not wish to go on record as favoring tobacco as a galactagogue, but at least it does not kill the baby outright.

Upon the gastro-intestinal tract, the effect upon the novice of his first smoke is too well known to require a detailed description. The nausea, vomiting, and sometimes diarrhea, indicate a decidedly unpleasant effect upon the digestive apparatus. There is an increase in the salivary and gastric secretions, and in the peristalsis both of the stomach and intestines, until a tolerance is established. After tolerance is thoroughly established, however, so far as I can learn, the effect upon the digestive apparatus is slight, if any. The belief is prevalent that it interferes with the appetite, and thus keeps the weight down. The slightly greater average weight of the smokers in my series would disprove this.

Another popular belief is that tobacco has a laxative effect. Of 23 individuals questioned concerning this, 15 or 60 per cent, thought it had no effect, 8 or 32 per cent, thought it did have a slight effect, and 2 or 8 per cent, found it constipating. It is interesting that one of the men who found tobacco laxative also found that it stimulated his appetite.

Many authorities forbid the use of tobacco in the treatment of peptic ulcer, but none give a clear reason for its proscription. The possible objections to it are, first, that enough of the nicotine might be swallowed with the saliva to cause irritation; second, that it stimulates gastric peristalsis; third, that the irritation of the mucus membrane of the mouth by the smoke might cause a reflex outpouring of the gastric juice. The first objection is theoretical rather than practical. The last two might all hold good in the case of a novice, but not in the case of a seasoned smoker. On the other hand, most smokers tell me that the gnawing of an empty stomach is relieved by a smoke.

As to its effect upon the nervous system, I am inclined to think that the average highly nervous individual smokes to excess because he is nervous, rather than that he is nervous because he smokes to excess.

As a result of three years' clinical study of tobacco smoking—admitting all the ignorance possible of the laboratory side of the question—I am convinced that its chief effect is a local one, exerted upon the mucous membrane of the pharynx, less frequently upon the larynx and trachea,

and exceptionally of the bronchi. Most inveterate smokers show a marked congestion of the pharynx, and many either clear their throat or cough habitually, regardless of the brand or the form of tobacco smoked. That, however, this irritation seldom if ever affects the lungs, and that there is little foundation for the once popular belief that smoking predisposes to tuberculosis, is evidenced by the fact that coincident with the tremendous increase in the use of smoking tobacco during the past ten or fifteen years, there has been an equally striking decrease in the occurrence of tuberculosis. An interesting observation made by my friend John Berry[8] during the World War is further corroboration. Of 1768 American soldiers sent to him in France for pulmonary physical disability, most of whom were tubercular, 532 or a fraction more than 30 per cent, were non-smokers. Assuming the present ratio of about 82 per cent smokers to have held good among the soldiers during the war—and I am assured it was no less than that—it is evident that tobacco played no part in the causation of pulmonary disability.

SUMMARY

1. In a series of 150 adult male smokers, the systolic blood pressure was 128.23, the diastolic 78.87. In the same number of non-smokers, the average systolic pressure was 129.64, the diastolic 79.23. The average age was practically the same, 42.63 years for the smokers, 42.4 for the non-smokers. The weight of the smokers was 164.44, of the non-smokers 161.08. The height was the same.

2. Of fifty fatal cases of angina pectoris in males, 37, or 74 per cent, were smokers; 13, or 26 per cent, non-smokers. As a control, of 1,000 adult males taken from telephone directories in five cities, 81.8 per cent were smokers.

3. In a series of twenty individuals tested, the blood pressure after smoking showed no change in five but dropped in fifteen. The average fall in blood pressure after smoking for the whole group was 4.9 systolic, 3.4 diastolic.

CONCLUSIONS

1. Tobacco smoking apparently has no permanent effect upon blood pressure.

2. There is no foundation for the popular belief that smoking keeps down the weight of an individual.

3. It is doubtful if tobacco plays a major part in the etiology of angina pectoris.

4. The act of smoking, if it affects blood pressure at all, reduces it temporarily.

5. The effect of tobacco smoking is chiefly local, exerted principally upon the pharynx.

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DISCUSSION

Dr. William Allan, (Charlotte): Dr. Johnson has done a very unusual, and, I am afraid, a very reprehensible thing in bringing a lot of concrete observations, a lot of facts, in other words, in here when he wants to discuss the use of tobacco. Tobacco is generally discussed from the standpoint of prejudice either for or against it.

The finding that blood pressure is lower between twenty and forty in his series of cases I think is not an unusual thing, particularly in city dwellers. At about the age of thirty, those men are beginning to get fat and sedentary, and I think a man generally has a lower blood pressure if he is a city dweller between thirty and forty than his blood pressure was between twenty and thirty. He is less active.

I think in stopping people from using tobacco in high blood pressure, we are simply inflicting on them another punishment, just like we punish them by pulling out all their teeth, stopping them from eating meat, and various other futile things we do to people with high blood pressure.

Dr. Johnson's figures show, I think, very clearly that tobacco smoking plays no part in the incidence of hypertensive cardiovascular disease, nor does it seem to play any part in the pathology, the sclerosis that underlies angina pectoris and coronary occlusion.

Dr. Frederick R. Taylor, (High Point): I might just have a word. This is a little in line with our work. Dr. Johnson, I think, has done a magnificent piece of work in this paper.

With regard to our findings of angina and smoking, we have not found any definite relationship. Our cases were too few, as I stated, but we have found quite a number of physicians themselves who have made this statement, which may be prejudiced, that they have these anginoid pains which are not true angina pectoris (and I do not think are a menace to life) because, they have said themselves, they smoked too much. I think it may be possible, but I do not know, that some of these functional pains of little prognostic import may be due to excessive use of tobacco.

With regard again to excess in tobacco, I might add that we considered over four pipes or over four cigars a day an excessive amount, and a man with tobacco amblyopia told me he never smoked less than two

pipes before breakfast and never less than sixteen pipes in one day. That seemed to be a definite excess of a gross nature. His vision was about one-tenth, about two-twentieths, in each eye.

With regard to nervousness being the cause of smoking to excess, I think it very frequently is, but I also think that it may be a vicious circle. A nervous man gets a nervous habit of smoking to excess and that increases his nervousness.

I assume, I don't know whether he brought it out or not, that Dr. Johnson is speaking solely from the standpoint of adults. I wish he would give us his opinion on the effects of tobacco in young boys and girls. I think that is a vastly different problem, and my own feeling is that we are not on debatable ground in that problem, but that it is definitely and markedly injurious to immature boys and girls.

Dr. C. O. Abernathy, (Raleigh): I smoke but don't chew. I want to call Dr. Johnson's attention and the attention of you people to one thing about smoking. I have seen one man that it was true without a doubt in the world that hematuria was caused by excessive cigar smoking. We took him off his cigar smoking and his blood in his urine ceased. We put him back on his cigar smoking and the blood in his urine came again. Take it for what it is worth.

Chairman Nesbit: Is there any further discussion?

I would just like to say a few words. I think that tobacco smoking has a very definite effect on the gastro-intestinal tract. I don't believe that you can cure most ulcer cases unless the tobacco is taken away from the patient. Gray, of Brooklyn, has studied 250 cases thoroughly, including X-rays, in which the symptoms absolutely simulated duodenal ulcer. He worked them out thoroughly, found that they were all heavy smokers, and practically every case, when the tobacco was left off, the symptoms disappeared. He did not find ulcer present in any of those cases.

I think it is also very important in certain of the hyperacidity cases. They can do everything you tell them to do. They can follow the diet and they can take the alkalies and keep themselves perfectly regular, but if they keep on with the tobacco they will not get well. I have noticed that particularly in women who dip snuff. Most of them won't stop. They have been dipping for twenty or thirty or forty years, and they contend it does not hurt them, so they don't stop, but they do everything else, and finally they go off to somebody else who doesn't tell them to stop. I know from personal experience that excessive smoking will cause a tremendous spasm of the pyloris and considerable pain. I don't class myself as just beginning to smoke I have been smoking about twelve or fifteen years.

Dr. Johnson, closing discussion: I didn't expect everybody would agree with me.

I think Dr. Taylor is probably right, that there are a good many cases of anginoid pain due to excessive smoking and the withdrawal of tobacco

will stop them. That is why, in the series of angina cases I drew the conclusion, I took only the fatal cases because I think we can assume that they were genuine.

As to smoking causing nervousness, I think if a person of a nervous type did not smoke, he would probably be chewing gum or gnawing his fingernails or chewing pencils, or doing something else. I did only consider adults in this series. I took only from twenty years up; did not consider the effect upon children.

Dr. Abernathy's observation is most interesting. As far as I know, I haven't seen a case of that kind myself, but I will be on the lookout for it after this. What Dr. Nesbit says as to the effect on the gastro-intestinal tract, is interesting. I don't know what effect it has. I couldn't reason out in my own mind any clear-cut reason for forbidding the ulcer patient to smoke. I have had several patients who have been cured of ulcers, who did smoke moderately all the way through. I did have them cut down on their smoking though, and have them smoke after meals rather than before. (Applause.)

SODIUM THIOSULPHATE IN THE TREATMENT OF METALLIC POISONING

By Dr. C. O. Abernathy, Raleigh

Our attention was first called to sodium thiosulphide or sodium hyposulphate or the developing fluid that people have in making photographs in the treatment of the various reactions that take place in arsphenamine treatment. How this drug acts is rather doubtful. It probably has both a chemical action and a cell reaction. The chemistry of sodium thiosulphate with arsphenamine is too complicated for me to put on the bulletin board. I had a chemist write it out for me. Sodium thiosulphate added with arsenic, or the arsphenamine will give you an arsenous thiosulphate which is supposed to be non-toxic. I say supposed to be because I don't know. The fact remains though that when you give sodium thiosulphate in the arm, when you get some of the arsenic out in the tissues, the pain is relieved and the swelling goes down and you don't have the permanent indurations.

The action of bichloride of mercury with sodium thiosulphate forms mercurous thiosulphate which is insoluble in everything. So I think there we have a very definite chemical reaction taking place. I was very much chagrined when I took some of these test tubes and thought I would get some beautiful reactions, and when I put the bichloride of mercury and the sodium thiosulphate together, I got black precipitate.

When I put the sodium thiosulphate and arsphenamine together, I got nothing; they went together very nicely. When I put zinc sulphate and sodium thiosulphate together, I got nothing. I did not try it out in bismuth because I had no soluble bismuth at hand.

The first case I wish to report to you in the sodium thiosulphate treatment of arsphenamine reactions was the case of a man thirty-two years old who had had five injections of neoarsphenamine. He developed a typical dermatitis exfoliativa, and he had had this for several weeks when I saw him. We put him on injections of .5 gram of sodium thiosulphate every third day and, of course, gave him the local treatment we use in that skin condition. He made a very slow recovery, but rather uneventful, and got entirely well.

A second case we tried it on, died. This was a policeman, a well-developed man of thirty-five who had had six injections of arsphenamine and developed a very decided dermatitis exfoliativa. He was given sodium thiosulphate, 1 gram every other day for about four doses. He got dissatisfied with his doctor because he would not use a local application and went to another physician. They do that sometimes. I suppose this other physician took a Wassermann on him and found it positive and gave him another dose of arsphenamine, and he died.

The third case I want to report to you was a young man who came in and his diagnosis was made with a negative Wassermann, a dark field. I thought I would be rather smart—or I would have had better sense—and gave him 9/10 of a gram of neoarsphenamine, four days apart. The sixth day he developed a temperature of 104, with no other symptom. I knew what was the matter and gave him 1 gram of sodium thiosulphate and put him to bed. His temperature stayed 104 for four days. He was getting 1 gram of sodium thiosulphate intravenously, daily. The fourth day his temperature went down to 101 and we felt better. He was kept in the hospital six days; with six injections of 1 gram of sodium thiosulphate, one a day, he left the hospital, and I am happy to say he had no albumin or cast in his urine when he left. I saw him four days afterwards and his urine was still normal.

In bichloride of mercury poisoning, I was reading a Materia Medica, I think, yesterday, a 1925 edition. That was the first one I had been able to find where sodium thiosulphate had been recommended for mercury poisoning, and they used about one line in it. That rather surprised me because when we started on this drug, we pretty nearly did what a great many other doctors did—went crazy on the subject. The first case we used it in was one where we were doing a cystogram and the shadow-producing substance we use is 12 per cent of sodium iodide, to which is added, to make it antiseptic, 3/8 of a grain of mercuric iodide. Somebody put 3/8 of a grain of mercuric iodide to the dram in the solution we used that day. We put 48 grains of mercuric iodide in that woman's bladder. She complained of pain and burning. We forgot that; we went out and played a game of golf and came back and she was having bloody stools, very severe tenesmus and frequency. We didn't know what the trouble was. We gave her some morphine to relieve her colic, and hoping to relieve her frequent stools, went around and looked at the bottle and that didn't show us anything. We called up the druggist and he said he had

put 3/8 of a grain of mercuric iodide to the dram. We gave her 5/10 grams of sodium thiosulphate that night at ten o'clock, gave her some glucose in the vein and some salt solution in the vein. Twelve hours later we gave her one gram of sodium thiosulphate in the vein and then followed the ordinary treatment for diarrhea, and the woman got well without any urinary symptoms, and we later put her under a general anesthetic and fulgurated a couple of flat tumors in the bladder and she is still apparently all right.

The next case I want to call to your attention was a young lady who had lived long enough, she thought. She took six tablets of bichloride of mercury dissolved in a glass of water, and as they usually do, they come in and tell it. I think it was forty minutes after this, her stomach was washed out with the usual things that they use in bichloride of mercury poisoning. Eight hours after that she was given 5/10 grams of sodium thiosulphate. Then, six hours after that, she was given a gram; twelve hours after that she was given another gram, and for fourteen days she got a gram of sodium thiosulphate daily. She went four days without secreting any urine. We did everything on earth to her. I don't think we left anything that we had ever heard of undone, in addition to the thiosulphate. We gave her glucose and epsom salts and everything else we had ever heard of in the veins. She is still walking around, with apparently no other symptoms now than a few teeth she had to lose by extraction.

The next case we had was another woman who thought she wanted to die. She was supposed to have taken I think three or four tablets of bichloride of mercury, and I don't know exactly how long before she was seen, but her stomach was washed out and some sodium thiosulphate —5/10 grams, was given her, probably an hour after she took the bichloride of mercury; her stomach washed out earlier than that. Eight hours afterward she was given another gram of sodium thiosulphate intravenously, and twelve hours after that she was given another, and the third day she went home and we haven't heard anything else about her. We see her every day on the street.

Now, the first thing is: Did she take the bichloride of mercury? We don't care whether she took it or not—she didn't die.

So much then for the treatment of bichloride of mercury with sodium thiosulphate. The other thing we have used sodium thiosulphate in is salivation, where we have given too much mercury in a treatment of lues. It works very nicely, peps the gums up some way or other, I don't know how. Of course, we don't sit still and give her just sodium thiosulphate intravenously. We give him or her a mouthwash and treat him the best we know how as we used to treat people with salivation and they get well and do all right.

The other thing we used it in is bismuth poisoning. Nowadays we have quit using arsphenamine very much in tertiary lues. Bismuth, as a drug, is used practically altogether, and we get some bismuth poisoning, sore mouth, black gum and so forth. Sodium thiosulphate intravenously will relieve that

condition with a mouthwash added thereto. We have had no experience in the treatment of lead poisoning but the reports we have had are that it acts excellently in lead poisoning. One case has been reported where a man was given lead and zinc wash for urethritis, and he didn't understand the English language very well and he took 8 ounces of this drug in three days, by the mouth. He is living.

I bring this drug to you people this afternoon not to bring anything new—it isn't new. It has been here ever since I have been here, I am certain. But I wonder why it hasn't been more stressed in the treatment particularly of bichloride of mercury poisoning? (Applause.)

CHAIRMAN NESBIT: Dr. Abernathy's paper is open for discussion.

DISCUSSION

DR. W. B. DEWAR, (Raleigh): This paper of Dr. Abernathy's is possibly one of the most important papers that is going to be brought up so far as the general practitioner is concerned. My acquaintance with this drug has been made through Dr. Abernathy. There are two or three things that I wanted to say about it. It has been recommended for the treatment of metallic poisonings for a period of over twenty years, but never recommended intravenously. About 1923 there were reports in this country and Germany, of good results from the use of sodium thiosulphate intravenously in mercury, arsenic and the other metallic poisonings. The rationale of the treatment is to produce insoluble metal within the blood stream or within the tissues before it has damaged the vital organs. For example, in mercury especially the kidney.

The two main factors in getting results, so far as we have been concerned in treating cases, have been, first, its early use after taking the metal, whether it has been given as a therapeutic agent or with suicidal intent. The second thing is sufficient dosage and prolonged treatment. In the past two or three years, men here in the South, and some of them in our own state have used this drug, but most of them have felt that it was not a good therapeutic agent in these metallic poisonings. From our few observations in cases we believe that possibly this is due to the fact that the drug has not been given early enough and in sufficient quantity and over a prolonged period of time.

In certain cases of mercury poisoning—I speak of that because that is the one that we have had more experience with than any other—there has been such great damage done to the vital organs, especially the kidney, before its use, that we can expect no results.

However, in some of the cases that come to us, the damage hasn't been great enough to produce a fatality up to that time, and if the drug is given intravenously in sufficient doses and over a period long enough, we believe that to a certain extent, this drug is specific.

The drug is practically non-toxic. It gives no reaction when given intravenously. If injected outside of the vein, it does cause a burning and a stinging, swelling and discoloration.

The case that we have felt that nobody could doubt the good effects of the sodium thiosulphate, so far as a specific, for this particular case, namely, a suicidal intent with mercury, was the girl that Dr. Abernathy has spoken to you about, who had taken 45 grains of bichloride dissolved in water, had not vomited, and it was forty minutes before her stomach was emptied. She came into the hospital eight hours after that. Dr. Abernathy was asked to see her with me. We used sodium thiosulphate on her immediately, besides the other measures that we used with her, such as bleeding, the use of magnesium sulphate, 10 per cent intravenously, glucose, saline solution under the breasts and the like. This girl, as he told you, went over four days without secreting any urine whatsoever. She developed the typical signs of a mercury poisoning, namely bloody diarrhea, vomiting blood, loose teeth, sore mouth and the like, and the strange thing is, on the fourth day when she began secreting urine, the urine was practically normal except for faint trace of albumin. A thallein test done on this case about the second day after she began secreting urine showed a 5 per cent thallein elimination in two hours. Three days later it showed a 15 per cent elimination, and about two weeks later, just before she left the hospital, she showed a 45 per cent thallein output, with no albumin, sugar, or casts, whatsoever in the urine. I think that Dr. Abernathy is to be congratulated in bringing this thing before the Medical Section. I think it is important because of the frequent use of arsphenamine and neoarsphenamine especially in lues, and because of the occasional poisoning by accident and the frequent poisoning nowadays by mercury with suicidal intent. And I believe that if used in sufficient quantity early and over a prolonged period of time, it may be specfiic especially in mercury poisoning.

Dr. E. R. Livingston, (Gibson): I did not hear all of the doctor's paper, and if I am asking something that he has already gone into, I apologize to the men here who have to go through it again, but I would like first to report a case, with the intention of asking a question.

I would like to know how late in arsphenamine poisoning is it possible to do good by giving the thiosulphate. I have in mind a young fellow who was being given neoarsphenamine for trench mouth and he had it starting with 6/10 gram for four doses, ten days apart, with absolutely no trouble from it, and the fifth dose he was given he immediately became nauseated. I guess the doctor who gave it had never had a case of poisoning from it and so he paid no attention to it. This chap was from South Carolina, so he was immediately sent home, and I saw him after he had had a definite rash over the entire body and I had never seen a case of that kind. I felt sure that it would blow over in a few days, and didn't do anything for him for two days (I mean in the way of thiosulphate) but began giving it to him, and the thing that I would like to know is, would this have done good after he had enough poisoning to have developed a dermatitis exfoliativa involving the entire body? Even his nails

were involved. At no time did this fellow show any trouble with his kidneys, no albumin nor anything, continued to secrete plenty of urine, but every inch of his body shedded off and there was a slight excretion and he was continually scaling off. He died from exhaustion the fourteenth day. The question I ask is, is it too late to give it after a man has already developed dermatitis exfoliativa involving the entire body?

Dr. W. B. Dewar, (Raleigh): The method supposed to be recommended by the drug houses which want to sell drugs for treating bichloride of mercury is to wash the stomach out with a 5 per cent solution of sodium thiosulphate. You won't find much in the State of North Carolina right now. We couldn't find any in Raleigh. I happened to have some because some drug drummer had sold me some and that is why I started to use it. If you haven't got a druggist with it get some photographer and take his hyposolution and wash the stomach out with it. That is sodium thiosulphate or hyposulphate of soda.

They recommend to wash a stomach out with a 5 per cent solution and then leave a 5 per cent solution in the stomach—a pint of it. Then start your intravenous injections. About the lateness of this drug, I don't think there is any time too late to give it while the patient is living. The first case we reported had had a dermatitis exfoliativa I am certain over a week and I think she had had the last injection of arsphenamine at least three weeks before we started it. Most of the cases we have seen have been after the rash was developed, so I think it is wise to give it whenever you see the rash.

The method that we use is to take it out of the tissue, and keep it in the office in gram doses in 10 c.c. When we get some out in the tissue, we break an ampoule of that and stick it up in the syringe and shoot a little here and a little there, and forget it. The patient says it burns. Well, so does arsphenamine burn. Next day the swelling is gone, the pain is gone, and you don't have any permanent induration there.

Dr. P. M. King: Is there much discoloration following it?

Dr. W. B. Dewar: About the same amount as if you had a hemorrhage. It produces a certain amount of irritation, no question about that, but it does the trick.

A word away from the subject that we are on today. I was speaking on the subject of metallic poisoning. This drug is also used in the treatment of suppuric eczema and does some good. I will illustrate that by a case that was referred to us by a physician. The woman had a rather severe suppuric eczema of the vulva. The drug was used extensively, locally, for that condition. We figured that if it did good locally it would do good in the vein, and the doctor immediately told us we had gone crazy on the subject of thiosulphate. Well, the woman got well.

SOME CONSIDERATIONS OF THE DISEASES OF MIDDLE LIFE AND OLD AGE

By Lewis G. Beall, M.D., Black Mountain

Although the medical profession recently has been showing more interest in the prevention of disease, there is still before us a grave problem. Intensive campaigns have been carried on by Health Boards and individual physicians, trying to eradicate the infectious and contagious diseases. Much has been done, and we can now boast that the average span of life has been lengthened, within the past century, from about 33 years to 58 years. It will be our aim in this paper to determine if possible, just where this gain has been made and also to find out if we are gaining ground in our combat with disease.

If the earlier signs of disease can be detected and their causes removed, if early tendencies can be corrected, if we can know more of the end results of the acute diseases, can determine the effect of heredity and environment upon the habits and manner of living of the individual and then can prevent the diseases or change the habits or correct the environment, many more years of useful and productive endeavor may be saved.

It is true that the average span of life has been lengthened, but is it true that we are directing our efforts in that direction which will bring the greatest joy and happiness to the human race? The intensive study and use of preventive measures has decreased enormously deaths in early life, but we are now told by health officers, and we learn from the study of census reports, that there has been an enormous increase in early adult deaths from such causes as heart disease, kidney disease, liver disease, cancer, apoplexy and arterial disease. We find that nervous and mental diseases are overcrowding all of our public hospitals and institutions.

We find that the improvement in death rates has been in such diseases as typhoid, tuberculosis, intestinal diseases, smallpox and diphtheria. Another very striking fact is that these diseases have yielded to preventive measures rather than any specific cure, once the disease was firmly established, with possibly one or two exceptions. The death rate from tuberculosis has decreased from 201 to 97 per 100,000 in the last 20 years. But even now an advanced case is just as likely to die as if he had lived 50 years ago. Typhoid has dropped from 36 to 7.5. Diphtheria from 43 to 16. Intestinal diseases in children under 2 years of age, from 108 to 32. But all of this advance has been due entirely to preventive measures and not to curative measures.

On the other hand, we now find the beds of the hospitals occupied by a group of patients suffering from what might be called the degenerative diseases. More than one-half of these beds are occupied by patients afflicted with nervous and mental disease, and I venture to say that perhaps a majority of those mentally sick are also suffering from some form of physical disease, or their mental breakdown is the end result of some physical disease.

A report from one state hospital for mental diseases, states that during the two year previous to July 1, 1928, 982 patients were admitted and of this number 32 per cent were admitted because of syphilis, and 10 per cent because of pellagra. Report from another state hospital states that its population is increasing at the rate of 100 patients per year, chiefly due to the admittance of patients suffering from arteriosclerosis and other senile mental diseases.

During 1926, heart disease ranked as a principal cause of death in the United States. The total number of deaths was 209,370, an increase of 13.6 per 100,000 over the previous year. These deaths constitute from 10 per cent to 15 per cent of the total deaths from all diseases and demand a most earnest study as to the cause.

In North Carolina, in 1927, pellagra caused the death of 25 per 100,000 population, which was three times as high as the typhoid rate for the same year. In 1928, this rate had almost doubled, being about 40 per 100,000, and accounted for more deaths than typhoid fever, smallpox, diphtheria and malaria combined, and in addition sent many hundreds to the hospitals for the insane.

The study of these facts led me to make an analysis of the last 500 cases admitted to my own institution. All of these patients came to me because of some nervous or mental symptom and because their home physician thought they needed new environment.

I found that I had admitted 14 patients below the age of 20; 54 between 20 and 30; 121 between 30 and 40; 130 between 40 and 50; 83 between 50 and 60; 57 between 60 and 70; 31 between 70 and 80; and 10 over 80 years of age. I found that 189 were below 40 years of age, and 311 ranged from 40 to 87 years of age. That 251 were between 30 and 50 years of age.

In tabulating the final diagnoses, I found that dementia praecox, hysteria, manic depressive, psychosis and thyroid cases affected principally the younger group, and that these diseases accounted for 116 patients. In this group also there were some alcoholic patients, accounting for about 30 more.

In the group above 40 years of age, constituting about 62 per cent of the total number of patients, were found a great variety of diseases, the chief ones in the organic group being toxic psychoses, the exhaustion psychoses of the cardio-renal type, arteriosclerosis, pellagra, paranoia, cancer and cerebro-spinal syphilis, and in the functional group the psychoneuroses.

During this time, there have occurred 17 deaths (all in the group above 40 years of age), four each from cerebral hemorrhage and pellagra, two from senile dementia, two from myocarditis, one from Bright's disease, one from brain tumor, one from peritonitis, and one from suicide. This is an average of 34 per 1000. In the general hospitals of North Carolina and South Carolina for the year 1928, the average was 56 per 1000.

Economically one adult is worth many children, for it is the adult who carries on the work of the world. The usual duration of economic usefulness lies between 20 and 60, and the decade between 40 and 50 should be the one of the greatest productive value. I think the experience of all of us will bear out the statement that the impairments which bring these patients of 40 years old and above to our offices, begin before 30 years of age and require from 10 to 20 years for their development. If we are to prevent the impairments above 40 years of age, we must find them in the 20s and 30s. As stated above, I found that more than 60 per cent of my patients were above 40 years of age and that they were the ones afflicted with the degenerative diseases.

I made the statement before that the average span of life had been increased to 58 years. I now make the statement that we have not increased human longevity by a single day. It is true that the average life has been increased, but it is not true that the individual man lives longer. 50 years ago, one man in 25,000 passed the century mark; one man in 1,000 approached this mark but did not reach it; one man in 100 reached the age of 90; one in 10 the age of 80, and one in 3 or 4 the age of 75. The number of persons who attain these ages is no greater today than half a century ago. This emphasizes the fact that it is the individual we should study rather than the population as a whole. It is a justifiable statement that there is no fixed age for senility, and it is quite within the powers of scientific possibility to keep the vigor of 20 at the age of 40, and for the man of 60 to be as well and useful as the average man of 40 is today.

In combating these degenerative diseases, I cannot repeat too frequently that we should look for earlier signs. At least 50 per cent of all cardiac cases give a definite history of acute rheumatic fever. We do not know how many additional cases are due to scarlet fever, diphtheria, influenza, measles, syphilis, tonsilitis and other infections, including the common cold. We should bear in mind the fact that the heart has to withstand the invasion of all infectious agents which enter the blood stream.

In a recent article in one of the daily papers, I find the statement made that the common cold, to which so little attention is paid by anybody, costs the United States several billion dollars per year in loss of time from productive industries. In a survey made by the Public Health Service at Hagerstown, Md., over a period of 21 months, it was found that 61 per cent of all the illness in that city among 8,000 people, was caused by the common cold. Today we do not know how many or what proportion of the degenerative diseases is caused by this common enemy of the race, but to find this out constitutes a challenge to the medical profession.

The fact that 32 per cent of the patients admitted to one state hospital were there because of infection of syphilis, brings this disease into prominence. We know from statistics that syphilis is the cause of 100 per cent of paresis, 100 per cent of locomotor ataxia, 25 per cent of insanity, per-

haps 25 per cent of heart disease, 50 per cent of liver and kidney disease, and that it causes more deaths than cancer and tuberculosis combined.

Turning from these diseases which are of special interest to the general practitioner, may I say a word about the diseases which come under my particular field. As stated above, the 500 patients who came to me, came because of some nervous or mental symptom. It can be proved that mental diseases throughout the country are increasing. On January 1, 1910, in the United States, there were 176.2 per 100,000 population. In 1922 there were 205.8 per 100,000 population. In 1926 215.5 per 100,000 population, and in 1927 219.1 per 100,000 population. Approximately there are 75,000 new patients admitted to mental hospitals of the country every year. The New York State Department of Hygiene recently made public the results of a study of mental disease expectancy, according to which approximately 4½ per cent of the persons born in New York under existing conditions "may be expected to succumb to mental disease of one form or another," and become patients in hospitals for the mentally afflicted. This means that one person out of each 22 of the population becomes a patient in a mental hospital sometime during lifetime.

The overcrowding of our state hospitals for mental disease is a distressing concern of the state governments through the nation, many of the states spending from one-eighth to one-sixth of their total appropriations on the care and maintenance of these unfortunate members of the commonwealth. The budget of North Carolina, amounting to $15,500,000, recently adopted, sets aside $2,109,000 to care for these patients. Almost as much as that set aside for the educational institutions of the State, which receive $2,802,000. This financial burden does not take into consideration the suffering and privations of the families of these unfortunates. As we have already found, the majority of these patients are taken out of life in their most productive years, many times leaving families to struggle along in poverty and want. Only those having relatives who are afflicted with disorders of the mind are really able to understand the suffering which is produced by them.

The organic mental diseases are those which are the result in the main of some acute infection, and of course will be lessened as we win in our fight against the infectious diseases. However, whether it be fortunate or unfortunate, the organic mental diseases do not constitute the greater proportion of these diseases. Neurasthenia, one of the functional brain diseases, has been called The Great American Disease, (and in the 250 cases over 40 years of age, in my series, 150 could easily come within this classification).

With the development of the mental hygiene movement it was found necessary to broaden our search for the causes of mental disease. Beginning with the mentally ill adult, this search has followed the life of the patient backward throughout his experiences in college days, back through his adolescence, during his early school days, and finally to the circumstances and conditions which surrounded him in the earliest

years of his life. In fact, many years ago, Oliver Wendell Holmes made the statement that if we would have a sound mind in a sound body, we should select with great care our grandparents. We who make a special study of mental disorders have come to the general conclusion that all this group of illnesses, when they have developed to a point of recognition in the adult, have had a long history of preparation extending back to the childhood of the individual.

With the birth of the child, heredity has contributed everything which it can contribute to this child's development. He then becomes influenced by an environment which is good or bad, depending upon the circumstances by which he is surrounded, and which to a large extent determines whether he will be able to adapt himself to life and develop into a normal, healthy man, or go down in the conflict and join the ranks of those who are mentally ill. It is, therefore, of the utmost importance that the people who surround the child—his parents, his brothers, his sisters, and other relatives, and the teachers of his early days— shall be individuals who are worthy objects of his imitation and emulation.

Although the diseases of his childhood may to some extent affect his conduct, causing him to be more irritable or timid, or show some other lack of self-control, we feel very strongly that these anti-social character-traits are more the result of his environment and the attitudes of the people about him, which later cause him to develop into a person who manifests a definite mental disease, resulting in his being a patient in a mental hospital or coming in conflict with the law and being imprisoned.

We mental men rejoice to see a tendency on the part of those who are responsible for the education of the child, to treat him as an individual and not as a pupil in the school. We are glad that the school authorities are now providing him with the facilities of developing his own personality and helping to find that niche in the world to which he is best suited. We are glad also that juvenile courts have been established where the problems of juvenile delinquency are being considered as the departures from mental health and where efforts are being made to salvage these children who have begun to tread in the paths which would lead to their own destruction.

Surrounded by a wholesome and uplifting environment in the home and later in the school, the child develops courage and self-reliance, learns to cooperate and to adapt himself to all kinds of conditions gracefully, pleasantly and adequately. On the other hand, if he finds himself in an environment in which he is not understood, one of constant bickering and turmoil between his parents and his brothers and sisters, or cruelty towards himself, he soon develops a sense of inferiority and inadequacy, which later in life he strives to overcome by different compensations.

His compensation may take that form of mental disease which we call dementia praecox, in which he withdraws from the world of reality and builds about himself a more pleasant and agreeable world in which he lives.

He may become overactive, irritable, a busybody, constantly changing from one thing to another, and if thwarted in his desires, may become violent, destructive to property, entertain delusions and experience hallucinations, and thus be classified as a maniac.

He may become overwhelmed with the enormity of the problem and so magnify his own inferiority and inadequacy as to feel that he has committed some unpardonable sin; become depressed and brooding, slow in thought and retarded in his speech, confused and have hallucinations, and thus show the depressed phase of a maniac depressive psychosis.

He may be obsessed with morbid fears and obsessions, doubts, compulsions, nervous tensions and anxiety, some depression and at time agitation, and be placed under the class of the anxiety neuroses.

He may develop a physical and a mental weakness, irritability, depression, having all kinds of bodily complaints and disorders, indigestion, headache, backache, complaining of every other imaginable physical ill, and thus fall into that class which we designate as a neurasthenic.

Or he fails to adjust himself in numerous other ways and thus becomes a misfit in society.

Time does not permit a more detailed discussion of this very important subject.

In conclusion we find—

1. That deaths from degenerative diseases in those past 40 years of age are increasing.
2. That there is an increase of nervous and mental diseases.
3. That these diseases have their beginning many years before they develop to the point of recognition.
4. That early environment and training determines, to a large extent, the mental condition of the adult.

The problem whether the saving of those who would otherwise perish, is desirable or not is one which is impossible of solution at the present time, and I should not presume to venture an opinion. The mere lengthening of life's cycle should not be the only aim of medicine, even if it should be the chief aim. It seems to me the greater question is what shall be done with these added years. The inculcation of correct habits of living and proper mental attitudes, the teaching of higher ideals which make life worth while, through the application of psychology and psychiatry, belongs as much to the proper practice of medicine as the removal of a diseased tonsil or the prescribing for an attack of pneumonia.

DISCUSSION

Dr. Paul Ringer, (Asheville): While not a neurologist in any sense of the term, my work involves largely the treatment of chronic disease, and as such, with patients under observation for months, and frequently for years, it is necessary to go into these patient's habits of life, to their environment and also back into their antecedents in order to get a grip upon them and be able to steer them more successfully through the path-

ways which they must follow to get well of their lung conditions, and I have been in the past few years, more and more struck with the greater frequency of social maladjustment in these individuals.

I can not analyze it as satisfactorily as Dr. Beall does, because I have not the neurological or the psychiatric knowledge that he has. I am convinced, however, that it rests upon certain inherent present troubles with our modern life which, while we can not dissipate at one fell swoop, we should all strive to inhibit.

In the first place, I think there is entirely too little in our homes, taken by and large, of what Emerson called "plain living and high thinking." There is entirely too much concentration upon the pleasures of the world (I am not at all a prudist and I am not delivering a sermon here). But there is an idea that things can jog along and an idea of seizing the opportunity, whatever it may be, for good or ill, when it presents itself.

Then there is also the question of lack of control and constraint of the child and the fact that the parents do not set a good example to it, and father and mother go on, pleasure bent, and without any of the inhibitory hindrances which tend to make for seeking out the best that is to be realized in life.

The whole thing can be summed up, I think, as a question of *attitude* which is the thing that not only must be cultivated in the child, but which all of us can and should and must cultivate in ourselves. I have often found myself upset and almost distracted, one might say, by a certain combination of circumstances, and I have seen that by just stopping for a minute, maybe in the office, closing the office door, sitting down at the desk and taking a view of the whole situation, getting a change of attitude, I could throw off these irritating factors which were annoying me, and go ahead in a far more normal fashion, and I think that the striving for a different attitude on the part of parents and children for, as I said before, more "plain living and high thinking," will go far to lessen this question of social maladjustment, and therefore, also tend to lessen the neurasthenia, the nervous breakdowns, and the various psychoses from which so many of us see these patients suffering.

Dr. Albert Anderson, (Raleigh): (Applause as Dr. Anderson came forward.) Gentlemen, I simply rise to express my appreciation of Dr. Beall's paper, and the discussion so far has been very interesting. It is encouraging to see men like Dr. Ringer and the other internists in North Carolina taking an increased interest and making an increased study in mental and nervous cases.

Only a few weeks ago, I believe the first mental clinic that I ever attended was given at the Tri-State Medical Society in this room, and those mental cases (all but one) came from our hospital, the State Hospital at Raleigh.

I noticed that the general practitioners and specialists crowded about this clinic and showed intense interest in the presentation of each case which was a single type of each patient, and I thought that there was

something being done in North Carolina from year to year by the increased interest from fifteen years ago up to date when I entered this work.

Now, gentlemen, when you come to think about it, I believe that this specialty called psychiatry is the most general specialty in the practice of medicine, and to think that we men who are engaged in this work have to look after practically as many beds—did you say a third, doctor?—well, it has been about a half, almost as many beds for mental cases in North Carolina as there have been in all the general hospitals, and yet you start at Goldsboro, they have about five physicians counting the superintendent, about six at my hospital, the State Hospital at Raleigh, and about as many more at Morganton; less than twenty physicians looking after all these mental cases that we have assembled in these three State hospitals.

Now, I asked Dr. Taylor how many physicians are practicing in North Carolina, and he said from 2,000 to 2,500, looking after disease—special and general—of the body, in all the other hospitals. And I am only encouraged that you are now interested, and your interest is growing increasingly by the years, until in a little while, you will demand that our state hospital staffs will be increased so that we will take out among the people clinics that they so much need, that we will have trained men, as you have trained men in other special work, to acquaint the citizenry of North Carolina with mental and nervous diseases as they should be acquainted, because you are beginning to see, as we are, that psychiatry especially is a specialty that covers the whole field, and we are encouraged to believe that you will make the demand on the State to give us an appropriation, to increase the doctors, and put upon our staffs men who are trained to this work. I don't know why our young doctors do not take to this special work. It is one of the most fascinating and interesting studies of medicine, and I have tried general practice as well as this specialty, and I think there is more in it for a young man, and yet it is the most difficult thing for us to get a trained man. I think because we haven't the money to pay the price that they can make in general medicine, and yet in special work our mental men, psychiatrists who are looking after mental cases, are making good money, and I do hope to see the day, before I pass away, the nature of mental disease, that needs to be known to our people, will be studied and put out among the people in such a way as it needs to be really known among them.

Again, doctor, I want to congratulate you and Dr. Ringer on the words that he said about this, and I believe that we ought to have a general discussion of questions of this kind when it comes before the general practitioner for his information. (Applause.)

Chairman Nesbit: Is there any further discussion?

Dr. James Templeton, (Cary): There is one phase that I do not believe has been sufficiently emphasized. In fact, if it was alluded to in

Dr. Beall's paper, I didn't hear it. You know, we are living in a fast age, gentlemen, and we are in a hurry to get through with obstetrical cases, and most of the people carry (like I do) a pair of short forceps and an ampoule of pituitrin. I used to use them almost indiscriminately, and I believe, sir, that a very large proportion, or a great many at least, of the mental cases that come on years later are due to birth trauma. I am not sure, sir, but what physical degeneration is the result of the same thing. We don't understand what the effect of pressure upon the brain at birth may have upon the man at the age of 40 years. Possibly it produces a degeneration of the cardio-vascular system, nobody can prove that it doesn't, and I am satisfied, sir, so far as I am concerned in my very limited experience, that dementia praecox is associated with birth trauma.

I could go on and talk on that a great deal, but I just mention that as a possible factor in length of life.

THE IMPORTANCE OF DIAGNOSING EFFORT SYNDROME

By W. Bernard Kinlaw, M.D., F.A.C.P., Rocky Mount
From Medical Service, Park View Hospital

The heart action can be accelerated by any emotion. Fear is probably the strongest emotion, and can act as the stimulus for a more forceful, or rapid heart action, when it has as its background, a damaged heart. The public is being told repeatedly that heart disease is increasing the number of deaths annually and has surpassed even tuberculosis as a cause of death, and they know that the National Heart Association, county, state, and national public health workers, and others, are making efforts to eliminate the cause and reduce the mortality from heart disease. Is it unnatural, therefore, for any normal person to be alarmed, or fear the outcome, from any unusual heart action, or symptom that they may believe is associated with heart disease?

There are certain individuals who have inherited a protoplasm, and others, through too much coddling and restraint from physical effort during youth, have acquired it, whose temperament and reactions to various stimuli are such that the development of a neurosis is without difficulty. This neurotic type of person, plus some event such as a mental or physical strain, a prolonged sickness, or some infection, in fact, anything that brings about repeated spells of heart consciousness is prone to develop the condition that we speak of as effort syndrome. If they continue to work, and even play, in a hurry, they will sooner or later consult their physician, complaining of palpitation, dyspnea, exhaustion, heart pain, dizziness, or even syncope. They often appear anxious, perspire freely, and state that they have a frequent desire to take deep sighing respirations. This latter symptom is very suggestive.

Dacosta first noticed and reported three hundred cases during the Civil War and termed the condition "The Irritable Heart of Soldiers." The term "Soldier's Heart" developed from this. Very little was written

or said about the condition from then until the World War, when Thomas Lewis termed it "Effort Syndrome." It is also called "The Nervous Heart," "The Irritable Heart," "Neurocirculatory Asthemia," and Sir James MacKenzie called it "X-Disease." As excitement often produces the symptoms as markedly as does effort, the term "X-Disease," at least admits that we know but very little about it. Even though there were thousands of cases seen and studied during the World War, and numerous articles written about it, there is very little that is satisfying in the way of explanation, however, it seems fairly well agreed that there is no organic heart disease present and does not result in it later in life.

It is the recognition of these two latter facts that has urged me to write this brief resume, mostly as a reminder and not with the idea of adding anything new to the subject. It is by far the commonest functional disorder of the heart.

I have seen a fairly good number of cases during the past few years that I diagnosed as effort syndrome. I cannot help but be impressed with the large percentage of these cases that have been told they had a leaking valve or a myocarditis, and the majority of them have been given digitalis. The patient is always made worse by the mention of heart disease and also by the administration of the digitalis, as it and all other heart stimulants are definitely contraindicated in effort syndrome cases. Any patient under forty that confronts a doctor with a complaint of "heart disease," or any symptoms that the patient thinks is due to a diseased heart, has a high percentage of chance in his favor that he does not have organic heart disease. The patient with organic disease does not usually seem worried, and it is often difficult to get them to take enough rest or proper care of their cardio-vascular system, whereas, the effort syndrome patient will exert himself but very little. Points in the history that especially favor effort syndrome are fainting spells, dizziness, a desire to take deep sighing respirations, and they state that coffee makes them very nervous. Their heart will be rapid, usually during examination and especially after the slightest exercise, but even after an exercise test such as hopping—the heart will usually return to its previous rate within two or three minutes. It may be noted that their respirations are quite rapid before exercise but become about normal during or shortly after exercise. The most outstanding thing to my mind in this type of patient is the noticeable absence of physical signs as compared to the very numerous and pronounced symptoms of heart disease.

This paper is not on differential diagnosis but only a plea to every doctor that examines a heart, especially of a person thinking their heart is diseased, to give the patient a thorough physical examination, and secondly, not to mention heart disease or give medicine for heart trouble until you are certain that the heart is really at fault, or that the definite indications for digitalis are present. A careful, painstaking examination of the cardio-vascular system will put confidence in the patient, and if he is found to have effort syndrome, half the battle is won in the way of treat-

ment because he will believe you when you tell him that he does not have heart disease. If they do not get a careful study from their doctor, they will surely drift to someone else, and finally land in the hands of a chiropractor or some other cult, and it is this type of case that may receive a cure in their hands. Careful study is also important because occasionally one finds effort syndrome complicating organic heart disease. It is usually the effort syndrome and not the organic lesion that produces the symptoms. This is a bad combination and is difficult to handle. The case of effort syndrome most often diagnosed as organic disease is probably the one that presents some other functional disturbance, such as a systolic murmur that is of no significance, or an occasional drop beat.

An electrocardiogram is unnecessary to diagnose effort syndrome, and I believe that the general practitioner, who is certainly the backbone of the medical profession, is the one to diagnose and treat this condition, because he, at all times, holds the utmost confidence of his patient. I have made an electrocardiographic study, however, on the cases that I have diagnosed effort syndrome because after my suspicion of the condition I wanted to do everything that I could to rule out any evidence of true organic disease as most of them had been treated for it. I have in two cases—both intelligent young ladies—gone into detail explanation of the tracing, showing them how their tracing was normal, and compared it with some abnormal ones. By doing this and allowing them to read a few paragraphs in a text book about "effort syndrome" and "cardiac neurosis," I was able to make them realize that their heart was not diseased. I think in these cases the tracings were helpful to them as well as giving a certain amount of satisfaction in diagnosis.

The term "cardiac neurosis" should not be confused with "effort syndrome" as the former should be used only in patients that have a fear of heart disease but present no other symptoms or signs of it.

Before closing there is one other point that I want to mention as it may have a bearing on the importance of careful study in these cases,—that is, the difference between exhaustion and breathlessness. Some of these cases complain of exhaustion, some of breathlessness, and some of both symptoms. Sir James MacKenzie was of the opinion that practically all cases of effort syndrome were due to some type of infection and that when the focus was removed or the infection overcome, the effort syndrome would clear up. I think it is agreed by all cardio-ologists now, that there is no such thing as the "influenza heart," the "pneumonia heart," or the "athletic heart." These cases are considered as purely effort syndrome. Studies on the subject of exhaustion made at the St. Andrews Institute in Fife by the medical staff that was under the direction of MacKenzie, and presented by James Orr,[1] showed that in the vast majority of cases a patient will recognize from his own sensations that he is ill long before any examining physician can say what the nature of the illness is, but that

[1]Reports of St. Andrews Institute. Vol. II.

this sense of ill being is almost invariably a sensation of exhaustion. They also concluded that the sensation of exhaustion (that is, exhaustion on much less effort than was previously required to cause exhaustion) is regarded as evidence of the invasion of the body by a toxin, though the nature of the toxin may not be recognized for a long period. Exhaustion is never a direct cardiac response, and when a person's capacity for effort is diminished on account of the limitation of the reserve force of his heart he may be stopped by breathlessness or pain, but never by exhaustion. It would seem particularly important therefore to consider the effort syndrome patient that first noticed exhaustion as his primary symptom, as a case that is harboring some infection, or absorbing some toxin, and have a more hopeful outlook for a cure in this patient. The symptom "exhaustion" should stimulate frequent, careful examinations and steer one away from the heart as the seat of trouble. Breathlessness is the earliest and most frequent of symptoms which indicate limitation of the reserve force of the heart muscle and was the chief complaint in 279 out of 320 cases of failing hearts studied by Dr. Paul White. The true heart case gets a feeling of depression as if their breath is cut off. In the congestive type the puffing and blowing is different from the rapid breathing, sighing, etc., of effort syndrome.

In conclusion, it is the purpose of this paper to recall to your attention the fact that the three commonest symptoms of organic heart disease, namely, dyspnea, pain in the heart region, and palpitation, may be produced by the condition known as effort syndrome. It is necessary therefore in diagnosis to note whether there are physical signs to correspond with the patient's symptoms. The exception to this of course is the angina case that often presents no physical signs, making it therefore important to go into every heart examination in a careful painstaking manner. If this is done I am confident that more diagnoses of effort syndrome will be properly made. It was stated that during the recent war the only way to stop effort syndrome was to stop the war. It is often a difficult condition to treat but not near so hard to effect a cure when it is diagnosed "effort syndrone" instead of "heart disease."

DISCUSSION

Dr. Frederick R. Taylor, (High Point): I have very little to say. I was just remarking to Dr. Ringer, this question of effort syndrome was very forcibly presented to all of us during the war. It seems to me that it has been largely a matter of how we happen to be thinking at the time we are examining the individual patient, whether we make a diagnosis of effort syndrome or a functional neurosis, or something of that sort. Probably there are a great many cases that are what we call effort syndrome at one time that we call something else at another, and the same case that is called effort syndrome would be called something else another day if we happened to be thinking of another particular terminology. It is a real thing, but just what to call it is a problem. Dr. Ringer brought

up again the point that it depends to some degree not only on what kind of disease the patient has, but what kind of a patient the disease has. If the patient whom the disease has is an extremely nervous, excitable type, we are likely to speak of anxiety neurosis, hysteria, and so forth, whereas if he is a phlegmatic type, developing his trouble under excessive strain such as war conditions impose, I think we are more likely to look upon it as effort syndrome, but it is a thing that isn't yet, to me, a very clear-cut entity, and it is a thing that a great deal of difference of opinion can exist about, among, I think, equally good men.

Dr. William B. Kinlaw, closing discussion: I haven't anything further to say. I just wanted to bring it before the Society. I know the diagnosis of effort syndrome isn't made as much as I think it should be, and it is often called organic heart disease.

At this point, lantern slides were shown of X-ray findings in tumor of brain and scull, and a paper was presented by Dr. L. M. Fetner, of Charlotte, which was not loud enough to be reported.

DIABETES IN THE TUBERCULOUS—MANAGEMENT AND TREATMENT

By Dr. S. T. Crow, Asheville

Formerly, diabetes mellitus and pulmonary tuberculosis were considered as a fatal combination in practically all cases. This was possibly due to the fact that treatment was more or less directed toward the tuberculosis process, and the diabetes was ignored. Later, with the general adoption of the Allen fasting method of treating diabetes, patients presenting this combination could be given a better prognosis. The advent of insulin in 1922 brought about a better management of diabetes, which made it possible to control the hyperglycemia and glycosuria and simultaneously to nourish the patient sufficiently so that a still better outlook was possible.

There is no definite evidence that tuberculosis occurs more frequently in diabetics than in the general population of similar age. Montgomery, after a critical summary of the literature in 1912, concluded that it did not occur more frequently; and many other writers support his view. On the other hand, many authorities are of the opposite opinion. It seems plausible to assume that this combination does occur more frequently, in view of the fact that diabetics' power of resistance are lowered and that they are particularly susceptible to infections. It is also generally acknowledged that tuberculosis is more common in diabetics than in some other chronic diseases.

It was formerly a frequent terminal infection in diabetics. We have no reason to asume that the combination is any more frequent now than previously, except that the diabetics live longer now, so that their chances of developing tuberculosis are greater. However, with the decreasing tuberculous morbidity and mortality rate and the better management of diabetes, the association of the two diseases should become more infrequent.

While the advent of tuberculosis on diabetes is not infrequent, the development of diabetes in tuberculous patients is comparatively rare. Montgomery found that of 31,834 tuberculous patients treated in sanatoria, there were 101 cases cases of glycosuria and 51 cases of diabetes. Combining the two, it gives an incidence of five-tenths of one per cent among 31,834 patients. Tompkins recently reported 14 cases of diabetes in 4,500 admissions to the United States Veterans' Hospital at Oteen.

This combination of diseases presents a difficult therapeutic problem, since the two diseases influence each other unfavorably. Uncontrolled diabetes favor the tuberculous infection; and the tuberculosis, as any other infection, reduces the tolerance for carbohydrates. The treatment in the past was unsatisfactory, because the tuberculosis was given first importance. Landis and Funk have demonstrated that by treating the diabetes first and ignoring the tuberculosis, as far as diet is concerned, much better results were obtained. Their method was to build up the patient's tolerance by employing the principle of undernutrition, and then later to force overalimentation. Since the discovery of insulin, this is no longer necessary.

As persistent hyperglycemia predisposes to infections in general, it, no doubt, predisposes to the extension of latent and active tuberculosis, by providing a medium favorable to the growth of the tubercle bacilli. Assuming that this is true, it would seem a normal glycemia is necessary in order to prevent a spread of the tuberculous process. This has been the object of our treatment in these cases.

During my association with Dr. C. H. Cocke for the past few years, six patients, whom I would like to discuss, have come under our observation with this combination of diseases. They were all given routine sanatorium care; and the diet prescribed was computed so that the fatty acid-glucose ratio did not exceed 1.5, although at intervals, when it seemed necessary to increase the caloric value of the diet, an additional amount of fat was given. Extremely high caloric diets were not given, as the object of the treatment was not merely to fatten the patient, but to control the diabetes and maintain an average weight. In three of the patients, insulin was necessary in order to maintain their weight and control the hyperglycemia. In two, diet alone was sufficient. One patient refused treatment other than eliminating sweets from his diet. Except for an occasional rearrangement of the time of the insulin injections, the diabetes was fairly easily controlled in these cases.

Case No. 1. E. L., female, aged twenty-nine years, first came under observation July 8, 1925. *Family History*: Negative for tuberculosis and diabetes. *Past History*: Tonsilectomy in 1924. *Present Illness*: Patient stated that she was feeling perfectly well up to December, 1924, when she developed the symptoms of polydypsia, polyphagia, and polyuria. The same month she began to tire easily, and gradually lost weight. She also developed a cough with expectoration. She consulted her physician on account of these symptoms, in addition to a menorrhea of two months duration. Diabetes was discovered, and she was put on a diet and insulin. Pulmonary examination in February, 1925 revealed active tuberculosis, and the sputum contained tubercle bacilli. She was running a temperature of 100 in the afternoon. Her blood sugar was

340 mgm., and the urine showed 2.5 per cent. sugar. She was given a diet of 2,700 calories and 66 units of insulin. During the next five months, at strict bed rest, her weight went from 109 pounds to 134 pounds. Her cough and expectoration decreased considerably, and her strength was much better. She came to Asheville July 9, 1925.

Physical Examination and Laboratory Studies: Chest examination and stereoscopic radiograms revealed a chronic, fibrocaseous tuberculous process of the right upper lobe with a small cavity. The sputum contained numerous tubercle bacilli. The blood sugar was normal, and no glycosuria was present. The diabetes was well under control, as the patient was well trained to take care of herself.

Further Clinical Course: She remained under our care for three months, during which time she continued to improve. Her weight continued around 135 to 140 pounds. The diabetes was easily controlled. She was kept on a diet of 2,700 calories, and her daily insulin requirement was 66 units. There was quite an improvement in cough and expectoration, and the lungs became much drier. The cavity was gradually filling in. She returned to her home in Alabama in October, 1925. When last heard from several months ago, she was still improving.

Discussion: This patient, with severe diabetes and advanced tuberculosis made remarkable improvement. With continuous control of her diabetes and proper management of the tuberculosis, the prognosis should be good.

Case No. 2. J. A. B., female, 62 years of age, was first seen by us June 3, 1926. *Family History*: Negative for tuberculosis and diabetes. *Past History*: Was of no importance. *Present Illness:* Diabetes was discovered by her physician in April, 1925. The fasting blood sugar was 440 mgm. per 100 c.c. For three or four months prior to this, she had complained of polydypsia and polyuria. She was put on a diet and insulin. Ten days later she developed lobar pneumonia from which she made a good recovery. On discharge from the hospital, she resumed her original diet and insulin, which she failed to follow. In May, 1926, she developed a productive cough, and also had chilly sensations from time to time. She ran a temperature up to 101 in the afternoon. An examination by her physician at this time revealed advanced pulmonary tuberculosis.

Physical Examination: An emaciated adult, weighing 109 pounds against a standard of 149 pounds. There were signs in the chest of an old chronic, bilateral, fibrocaseous tuberculosis, with a large cavity in the right upper lobe. In addition, she had a complicating laryngeal involvement, a tuberculoma of the posterior commissure. The heart showed no enlargement or murmur. Blood pressure was 142/80. The radial arteries were hard, and showed moderate beading. The pulse was accelerated to 110 per minute. The abdomen was normal, as were the reflexes and extremities.

Laboratory Studies: Stputum contained numerous tubercle bacilli. Fasting Blood sugar was 335 mgm. per 100 c.c. The urine showed five per cent. sugar, and a trace or albumin. The blood count was normal. Wassermann was negative.

Clinical Course: The patient was placed at strict bed rest. After a few days of restricted diet, she became sugar free; and then the diet was gradually increased, until she was on a maintenance diet of C.70, P. 55, F. 155, (calories 1900). Available glucose was 177 gms. Twenty-five units of insulin were required to control hyperglycemia and glycosuria. Except for an occasional change in time of insulin dosages, the diabetes was readily kept under control. During the following four months, she gained ten pounds in weight. Her temperature gradually returned to normal, although the pulse was continuously accelerated to 100 or above. There was some decrease in cough and expectoration, and a moderate improvement in physical signs was noticed. The patient was making satisfactory progress for the extent of her trouble, when, following a hard coughing spell, she died from a profuse pulmonary hemorrhage.

Discussion: The prognosis in the case was poor, even if she had had no diabetes. However, it illustrates what improvement can take place in a patient with serious diabetes and advanced pulmonary tuberculosis, and with a complicating laryngeal involvement.

Case No. 3. S. S. H., male, aged sixty-two years, first came under our observation February 18, 1927. *Family History:* Two brothers and one sister died of tuberculosis. Patient was closely associated in business with a brother-in-law for several years, who died of tuberculosis. *Past History:* Usual childhood diseases without complications. Malaria at twenty-seven years of age. *Present Illness:* Diabetes was discovered three years ago, after he had symptoms of polyuria of several months. He has taken no treatment for the diabetes. About two years ago he began to suffer from early fatigue and loss of weight and strength. Shortness of breath also bothered him at times. On account of these symptoms, it became very difficult for him to manage his business. He states that he is much more susceptible to colds than previously. About two months ago, he went to bed, suffering with a severe cold, with cough and expectoration, which have continued. He also had night sweats and a temperature of 100 in the afternoon.

Physical Examination: A fairly well nourished male, weighing 138 pounds, against a standard of 156 pounds, with signs in the chest of advanced fibrocaseous tuberculosis on the left side, with cavitation in the left upper lobe. The heart was moderately enlarged, and a loud, musical systolic murmur, occupying all of the systole was heard over the mitral area, and transmitted out to the left anterior axillary line. There was no thrill. Blood pressure was 124/70. The abdomen was normal. The extremities showed nothing unusual.

Laboratory Studies: The sputum showed numerous tubercle bacilli. The urine contained three per cent sugar, and was negative for diacetic acid and acetone. No albumin or casts were discovered. The Wascsermann was negative; the blood count was normal.

Clinical Course: The patient was placed at bed rest, and was given a low caloric diet for a few days, until sugar free; and then the diet was gradually increased to C. 70, P. 50, F. 160. (Calories 1920, containing 115 gms. of available glucose.) He was able to take this diet without showing hyperglycemia or glycosuria. No insulin was required. During the next three months, he made fine progress. His weight increased eleven pounds; cough and expectoration lessened considerably; and the temperature gradually returned to normal. The physical signs in the chest showed much less moisture; and X-Ray films showed the lesion had cleared up considerably; and the cavity was somewhat smaller. He looked well, and stated that he felt better than he had in several years. At this time, he went home against advice, on on account of illness in the family; and, while there, in addition to his worries, he broke diet, and took considerable exercise. This ended in a flare up of all symptoms; and, on his return to Asheville three weeks later, an examination of his chest revealed considerable moisture in the left lung. The urine contained two per cent sugar. He had lost twelve pounds in weight, and had developed an afternoon temperature of 100. He was placed on his previous regime; but his response to treatment was much slower than previously, although during the next three months, his pulmonary signs improved moderately. The diabetes was fairly easily controlled. In October, 1927, he felt it necessary to return home on account of business responsibilities. A follow-up letter revealed that he had died recently. The cause of death was not given.

Discussion: In view of the fact that the patient made remarkable progress during the first three months of treatment, I believe, had he continued treatment a sufficient length of time, he would have eventually secured an arrest of his tuberculosis. This patient illustrates how an abrupt diet and debauch and a disregard toward

all rules for the recovery from tuberculosis can quickly aggravate all symptoms, and cause the patient to lose all he had gained.

Case No. 4. E. D. male, forty-six years of age, admitted to the sanatorium December 16, 1927. *Family History:* Mother died of tuberculosis. One uncle, paternal, died of tuberculosis. *Past History:* Nothing important. *Present Illness:* Was feeling perfectly well up to June, 1927, when he developed a slight cough, with expectoration, which gradually increased. He lost weight and complained of weakness; suffered with night sweats from time to time. In November, 1927, he had a small pulmonary hemorrhage. Examination at the time by his physician revealed pulmonary tuberculosis, diabetes mellitus, and chronic nephritis.

Physical Examination and Laboratory Studies showed a moderately obese male, weighing 208 pounds, against a standard of 186 pounds. Chest examination revealed signs of activity in left upper lobe and at the extreme right apex. Stereoscopic radiograms showed a chronic fibrocaseous tuberculosis involving left upper lobe, with a small cavity and a small infiltration of the right apex. The heart was moderately enlarged. No murmur or irregularities were discovered. Blood pressure was 162/96. The abdomen was normal. Extremities showed nothing unusual. The sputum contained numerous tubercle bacilli. The urine contained four per cent. sugar; no diacetic acid or acetone; albumin four plus. Many fine and coarsely granular casts were present.

Clinical Course: During the following five months, on a restricted carbohydrate diet and regular sanatorium care, his cough became much better, and expectoration almost ceased. His temperature gradually came to normal, and he felt fine. There was remarkable clearing up of physical signs, but the cavity showed little evidence of healing. The sputum was still positive. During these few months of improvement the diabetes had remained in the background. Then it seemed to flare up, and he began to show considerable glycosuria. We attempted to put him on a weighed diet; but he refused this, being content to eat as he pleased. At this time he made a trip home; and, on his return to Asheville, he failed to continue treatment. Recently he reported for a check-up, and X-Ray films showed an enlargement of the cavity, with extension of the process on the left side. The lesion at the right apex was inactive. The urine showed five per cent sugar and four plus albumin, with numerous granular casts. His weight continues around 215 pounds. He still refuses to undergo treatment.

Discussion: This patient, with diabetes mellitus, advanced pulmonary tuberculosis, chronic nephritis, hypertension, and myocardial damage, made fairly good progress at first. We feel that with proper treatment he could have made much better progress. Uncontrolled diabetes favored an extension of the tuberculosis process. The diabetes was probably the preceding disease. Obviously was probably a predisposing factor. Decrease in glycosuria is often under the influence of a tuberculosis process. It happened in this case during the first three months of treatment.

Case No. 5. P. S., male, thirty-seven years of age, first came under our observation September 20, 1928. *Family History:* Father died of tuberculosis. *Past History:* Influenza January, 1920. Asthma May, 1920. *Present Illness:* Was feeling perfectly well up to January, 1920, when he developed a moderately severe attack of influenza. He recuperated in a short while, and felt fine, until May, 1920, when he had an asthmatic attack. Following this, he has continued to have attacks of asthma at irregular intervals, which seemed to increase in frequency and severity. He also has had a productive cough, off and on. His weight had decreased, and his strength was not as good as usual. On account of increase in severity of asthmatic attacks, he consulted a physician, who discovered that he was suffering from pulmonary tuberculosis as well as asthma.

Physical Examination: A moderately emaciated male, weighing 115 pounds, against a standard of 149 pounds. The chest showed hyperresonance throughout both sides;

and, on auscultation, breathing was feeble over both lungs. Cough after expiration brought out a moderate number of medium moist rales over the left side, both anteriorly and posteriorly, and on the right over the upper half of upper lobe. Many sibilant and sonorous rales were heard over the entire chest. Stereoscopic radiograms revealed disseminated fibrocaseous lesions throughout left lung and the right upper lobe. The heart and abdomen were normal. The blood pressure was 102/90. The Wassermann was negative. The blood count was normal, as was the urine.

Clinical course: With bed rest and routine sanitorium care, the patient gained weight and strength. The cough and expectoration improved; and the asthmatic attacks decreased in frequency and severity. Two months after admission to the sanatorium, sugar was discovered in his urine. Subsequent examinations revealed this to be continuous. Fasting blood sugar was 132 mgm. per 100 c.c. The patient was classed as a mild diabetic, and dietary restrictions were ordered until he was sugar free. The diet was gradually increased, until he was getting about 2000 calories daily, without glycosuria. Since then, the diabetes has been under control, and the patient continues to make satisfactory progress. He had no temperature, except an occasional 99 in the afternoon. Examination on December 17, 1928 showed a remarkable clearing up of physical signs. No rales were heard; and, due to his rapid and great improvement, he was given a few minutes chair rest each day, which was gradually increased. At present, he weighs 127 pounds. Chest examination reveals no activity; and he is walking one and one half hours daily. He has no cough, expectoration or fever.

Discussion: This is a mild diabetic, with extensive tuberculous lesions throughout left lung and the right upper lobe. It is difficult to tell which was the preceding disease; but it is possible that the diabetes developed after the tuberculosis, since he had had several urine examinations during the past few years, and had had no symptoms of diabetes. The tuberculous process is in an arrested stage; and, with a control of his diabetes, he should make a complete recovery.

Case No. 6. E. H., male, aged nineteen years, first seen December 7, 1928. *Family History:* negative for tuberculosis and diabetes. *Past History:* Nothing of importance. *Present Illness:* was feeling perfectly well up to June, 1928, when he developed the symptoms of polyuria, polydypsia, and polyphagia. He also lost weight and strength. Examination by his physician revealed glycosuria. He was given a diet,—not weighed,—and insulin.

Physical Examination: Six months after onset of symptoms examination revealed an emaciated male weighing 110 pounds, against a standard of 135 pounds. Heart, lungs, abdomen were normal. Extremeties showed nothing unusual.

Laboratory Studies: Urine showed 7% sugar, and was positive for diacetic acid and acetone. The Wasserman was negative. The blood count was normal.

Clinical Course: The patient was put on a low protein and fat diet, until acidosis was cleared up, and then gradually worked up to a maintenance diet of C. 120, P. 60, F. 100 (calories 1620, the available glucose being 163.6 gms. Forty-two units of insulin a day were required. In three months the patient had gained 24 pounds, and his diabetes seemed under control. About this time he developed a cough with expectoration, and gradually lost weight. His insulin requirement was increased also so that 46 units a day were necessary. On account of cough and expectoration, he came to us for an examination, which revealed a tuberculous process with cavitation involving the right upper lobe. Stereoscopic radiograms revealed also a small infiltration in the left upper lobe. No evidence of fibrosis was noticed. The sputum was positive for tubercle bacilli. The patient was put at bed rest in a sanatorium, and during the past month has improved moderately. His cough and expectoration are better, and he feels much better. Frequent change in time of insulin dosage has been necessary to control hyperglycemia.

Discussion: This patient had a severe diabetes which probably activated an unrecognized latent tuberculosis. It illustrates how insiduously tuberculosis may develop in a diabetic. It also emphasizes the necessity for frequent examination of diabetic patients.

It is difficult to draw any conclusions from a small number of cases; but, from a review of the literature and a study of the above patients, I am convinced that:

1. Tuberculosis is probably no more frequent in diabetics than in non-diabetics.

2. When these two diseases co-exist, tuberculosis is usually the complication.

3. Best results are obtained when diabetes is given first importance; therefore, maintenance of a normal glycemia is the ideal goal of treatment.

4. As a result of the better management of diabetics, the prognosis of cases complicated with tuberculosis has been greatly improved.

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DISCUSSION

Dr. Paul Ringer, (Asheville): I think this is a very interesting and valuable paper, because it shows a man who has taken a great deal of pains with a condition which has been and still continues to be one of

the most distressing in medicine. We have two diseases which are diametrically opposed, one requiring hyperalimentation and the other hypoalimentation. In order to treat this condition successfully you have got to have in the first place a conscientious physician who understands the treatment of diabetes and also tuberculosis in its detail. These men are not frequent and Dr. Crow is one of them.

In the second place one has to have a patient that is going to obey and be cooperative to the very letter, and also a patient that has a considerable amount of native or acquired intelligence. Dr. Crow has shown one patient who died from an unavoidable accident, profuse hemoptysis. Two died because they refused to follow out their dietary restrictions. He also stressed the fact, which I think is most important, that the first thing to do is to treat the diabetes. Let the tuberculosis go hang. It will take care of itself during the time that you are controlling the diabetic condition. That is of paramount importance. As far as diet goes, he has clung to a rather low fatty acid-glucose ratio which shows that he is not a believer in the high fat theory in which I personally rather agree with him.

These cases that he has reported show very definite, consecutive effort, and a very good degree of success. At best, however, taking it broad and long, the fact still obtains that the combination of a fairly advanced tuberculosis with a moderately advanced diabetes, a slight tuberculosis with a severe diabetes, or a severe tuberculosis with a slight diabetes—you can juggle them around as in the shell game, it makes no difference what you do, the conclusion must be reached that the combination is one that is exceedingly serious, and that more often than not in the end one will fare badly. The two diseases are so opposed one to the other, that one has to choose the lesser horn of the dilemma and at the same time insist upon the patient's adhering to two very strict regimes of conduct, that demanded by tuberculosis, and that prescribed for diabetes.

Chairman Nesbit: I suppose the next thing in order is to elect a chairman for next year. Nominations are in order.

Dr. P. M. King, (Charlotte): I think Dr. Nesbit has acted very nicely this time.

Chairman Nesbit: I have been chairman once before.

Dr. Wm. Bernard Kinlaw of Rocky Mount was nominated.

The nomination was seconded, put to a vote and carried, and Dr. Kinlaw was elected chairman.

Dr. King: I would like to thank Dr. Heath Nesbit for coming to the rescue of this Section this afternoon.

The Section adjourned at 5:50 o'clock.

SECTION ON SURGERY

Chairman: Dr. Donnell Cobb, Goldsboro

The Section on Surgery met in the Club Room of the Jefferson Standard Life Insurance Company, in the Jefferson Standard Building, on Wednesday, April 17, 1929, at 2:00 p. m., and was called to order by the Chairman, Dr. Donnell B. Cobb, Goldsboro.

CHAIRMAN'S ADDRESS

THE TREND OF SURGERY

By Donnell B. Cobb, M.D., M.S., Goldsboro

The everchanging conceptions of the practice of surgery constitute one of its fascinations. It is necessary to take stock carefully of our surgical practice and it is essential to retain what is good and to eliminate what is proved to be bad. It is almost impossible to review all of the small advances and improvements that have taken place, but it is well to become familiar with the most important of these and to consider the general trend of modern surgical thought.

In Anesthesia the gaseous mixtures are retaining their popularity. Recent investigations have shown that the pulmonary ventilation plays a part in the rapidity and stability of the narcosis. To activate this ventilation and thereby obtain earlier narcosis and speedier awakening, carbon dioxide has been successfully introduced into the inspired air at the start and the end of the anesthesia. By using it at the end of anesthesia, it insures deep respiration and thus not only hastens the excretion of the general anesthetic agent, but facilitates thorough pulmonary aeration. By this means, it is now known that many postoperative pulmonary complications can be averted and the incidence of postoperative massive atelectasis resulting from the bronchial plugging by mucous and secretion can be greatly reduced.

Local Anesthesia is still being used extensively though now more often in conjunction with one of the gases, thereby securing greater relaxation.

Spinal Anesthesia is rapidly gaining adherents and in some clinics is being used almost to the exclusion of other anesthetics. All who use it are in accord as to its contraindication, that is, never in the extremes of age, nor when the blood pressure is low. Its greatest value is to be had in those cases where urgency is demanded but where active respiratory infection greatly increases the hazard of an inhalation narcosis. It is by no means intended as the method of choice in the extremely bad risks and

its use should be attempted only after acquiring a thorough knowledge of its limitations and dangers. From a surgical point of view it is ideal. It is associated with less danger of pulmonary and renal complications, gives excellent muscular relaxation and by producing perfect nerve blocking, aids in the prevention of shock. Certainly it has passed the threshold of doubtful applicability, and is now receiving wide recognition.

Erysipelas is no longer the dreaded condition is once was. The use of Birkhaug's serum (erysipelas antitoxin) is continuing to meet with almost general approval. Indeed the introduction of this serum appears to be one of the outstanding achievements of recent years. The antitoxin treatment of erysipelas marks an advance comparable with that of diphtheria. So far as the immediate attack is concerned it may now be regarded as a vanquished disease. Beyond the immediate attack, however, the serum offers nothing. It confers no immunity, nor does it appear to diminish the complications such as abscess formations. Facial erysipelas responds more readily than erysipelas of the trunk or extremities, but in all forms of erysipelas the antitoxin will result in an enormous economic benefit to both patient and hospital, and the period of disability will average a fifty per cent reduction.

Varicose Veins are being treated more universally by injection. Large series of cases are reported from clinics throughout the world and all who have used it extensively are enthusiastic. Various solutions have been used, but the most popular are solutions of glucose, sodium chloride or sodium salicylate. The desired reaction is an aseptic sclerosing endophlebitis, which is followed only by thrombosis with an intimately adherent clot to the affected area. Like most methods which have but recently come into vogue, optimism prevails in the literature. More recently untoward results are creeping in and one death has been reported following its use. On the whole, however, the method has been found to be very satisfactory and the results are excellent. It is certainly largely supplanting surgical extirpation. It must be remembered, however, that a good result depends upon the production of a phlebitis and no phlebitis is without possible danger. Certainly the safest method is that advocated by Moszowicz, of Vienna, who uses injection combined with ligation of the vein above and thus minimizes the possibility of embolus.

Colloidal Lead as advocated by Blair Bell is not new to us now. The method is still being tried throughout the world. The consensus of opinion today is that the intravenous injection of lead offers no cure for malignant neoplasms. The most that can be claimed for it is its use in conjunction with X-ray or radium in bone metastases or in osteogenetic malignancies. Here it does not cure, but is thought to make for greater palliation. From this form of treatment lead poisoning has been superimposed upon the devastating malignant condition, and unquestionably death has been hastened. At best it is a difficult and dangerous method, and, with our present knowledge, it has no right to enjoy general recognition.

The Surgical Treatment of Peptic Ulcer is not always followed by completely satisfactory results. In an attempt to lessen the possibilities of disappointment more radical surgical methods have been advocated, the outstanding of which is partial gastrectomy. European surgeons seem in accord as to the advisability of extensive resections. The amount of acid reduction achieved by partial gastrectomy is significant. While resection does not produce an acidity in as large percentage of cases as previously believed, it nevertheless accomplishes a far greater reduction than gastro-enterostomy. Finsterer states that of his recent gastric operations for ulcer 98 per cent have been resections. Since 1919 his gross mortality has been 3.8 per cent, and his three to fifteen year cures have been above 90 per cent. This is indeed enviable. Such results are by no means universal for Schloffer reports from the Prague Clinic a series of resections with a 10 per cent mortality and only 69 per cent cures.

But these radical resections may be followed by a recurrence of the peptic ulcer. When 53 cases have been recently reported from one clinic in which recurrence of ulcer after resection has been found, it puts a very different light upon the whole subject. Obviously partial gastrectomy is not the surgical panacea for peptic ulcers that some would have us believe. In the light of our present knowledge it is the operation of choice for large perforated gastric ulcers. It is not a reasonable procedure for small gastric ulcers distant from the pylorus. For duodenal ulcer it is not only unnecessary, but is extremely unwise, and where the operation has been performed for this condition, the greatest number of recurring ulcers are found.

It is too early to draw final conclusions regarding the absolute indications for, and the end results from, gastrectomy for peptic ulcer. The fact that it does not necessarily protect the patient against subsequent ulceration, that it does not insure perfect digestion, that it causes a gradual change in the flora of the upper intestine, so that it assumes the fecal character of the lower intestine, and that it makes any subsequent gastric operation extremely difficult, is sufficient to call for intensive consideration before performing partial gastrectomy for the average run of peptic ulcers.

Gastro-enterostomy has in recent years been subjected to a most scorching criticism. The occasional occurrence of a vicious cycle, its ineffectiveness in controlling a bleeding ulcer of the posterior duodenal wall, and above all, the postoperative incidence of jejunal or gastro-jejunal ulcer, have combined to shake its "established supremacy." But when we stop to consider the thousands of patients who date their restoration to health from the day they underwent this operation, we cannot but recognize that it has a large field of usefulness and will have a permanent place in surgery.

Gastro-enterostomy admirably relieves any pyloric obstruction and usually produces a gratifying reduction in the gastric acidity. For the old standing ulcer which has led to stenosis of the first part of the duodenum with a consequent dilatation of the stomach, gastro-enterostomy is the

most effective operation. For small gastric ulcers, and especially those situated distant from the pylorus, it is of distinct value when combined with direct attack on the ulcer. When reliable reports show 90 per cent cures following this operation, it is difficult to understand why gastro-enterostomy has been lightly spoken of as a disease.

Out of the apparently unending controversy over gastrectomy and gastro-enterostomy and the ardor that is still being shown for the extensive resections, it is gratifying to hear Judd express the opinion that the enthusiasm for extensive resections in cases of peptic ulcers, represents only a passing vogue. And as for duodenal ulcer, he offers a procedure that seems most rational—one that removes the ulcer and places the pyloric sphincter at rest. This is accomplished by excising that portion at the pylorus which contains the ulcer, including in the excision a portion of the pyloric sphincter. He feels that this comparatively simple procedure allows the stomach to function more nearly in its normal way and eliminates the possibility of gastro-jejunal ulcer.

The present day opinions are that partial gastrectomy should be reserved for the cases presenting large bleeding and perforated gastric ulcers. Gastro-enterostomy is the procedure of choice in the old obstructing duodenal ulcers associated with gastric dilatation, and in the small gastric ulcers when combined with a direct attack upon the ulcer. For the recurring acute ulcers of the duodenum without appreciable stenosis but with marked gastric hyperacidity, a gastro-duodenostomy which removes a portion of the sphincter and permits of the excision of the ulcerated area is the procedure of choice.

The permanent success of gastro-duodenal surgery for peptic ulcer is dependent on the ready passage of gastric contents and the free regurgitation into the stomach of pancreatic and biliary secretion. But the controversy over the best operative procedure will continue until more is learned concerning the etiology of ulcer.

Paralytic Ileus is now being treated in an entirely new way. Enlightening communications have appeared from Olivecrona of Stockholm, Morkowitz of the University of Toronto, and Ochsner of Tulane. The therapeutic value of spinal anesthesia in the treatment of ileus was emphasized by Wagner as far back as 1922.

Trauma causes a well marked and relatively prolonged cessation of peristalsis. Perforation peritonitis also brings about cessation of peristalsis, though less constantly and to a lesser degree. The exact mechanism by which this is brought about has not been established, but it seems to be of an inhibitory reflex nature. Whereas the exact anatomic basis is only incompletely known, it appears certain that paralytic ileus is dependent upon the integrity of the reflex arc. Any form of treatment that would break this reflex arc and relieve the inhibitory effect should relieve the paralytic ileus. This can be accomplished in two ways: By injecting the splanchnic nerves with novocain, or by injecting the novocain directly into the spinal canal.

These newer ideas should be sustained by further work, but it is obvious that here we have an exceedingly important contribution to surgery. It is of extreme practical importance that spinal anesthesia is promptly curative for paralytic ileus in man, and seems more rational than the treatment of paralytic ileus by jejunostomy.

Evulsion of the Phrenic Nerve is finding greater favor as a means of producing partial compression and immobilization of a lung. The operation is simple. The result of cutting the phrenic nerve is a homolateral paralysis of the diaphragm causing it to rise about two interspaces higher than normal, reducing the thoracic cavity about 500 c.c. The dangers from this homolateral paralysis of the diaphragm are small. It is helpful in treating cases of unilateral tuberculosis, abscess, bronchiectasis or unilateral pulmonary hemorrhage. It is indicated only where collapse of the lung can not be obtained by artificial pneumothorax on account of adhesions. It may be conjointly used with extra-pleural thoracoplasty. Harrington has adopted the practice of performing phrenic neurectomy as a preliminary step in the treatment of diaphragmatic hernia, for by paralyzing the diaphragm on the afflicted side, the operation is made easier and the recurrence of the hernia less likely.

Surgery of the Sympathetic Nervous System is extremely difficult to evaluate. Years ago operations were undertaken upon the sympathetics for the relief of such unrelated conditions as epilepsy, Graves' disease and glaucoma. And today its most ardent advocates attempt to relieve by like procedures, anything from angina pectoris to dysmenorrhea. The exact physiology of the sympathetic nervous system is not understood. Nor do we understand the cause and mechanism of the various diseases for which sympathetic surgery has been attempted. Considering this very hazy state of affairs it is most gratifying that good results are obtained from some of these operations on the sympathetic nervous system, and that, apparently, progress is being made.

Angina Pectoris stands out as being the one disease for which most hope was held. The operation here consists of dividing the communicating branches from the 5th, 6th, 7th, and 8th cervical and 1st dorsal ganglia, preferably on the left side. The uncertainty of the results obtained are probably due to the various etiologic factors producing typical anginal attacks. In a few, the pain has a vasomotor basis and in these there is a relief of the spasm of the coronaries. Most anginal pain is due to arteriosclerosis of the coronaries and the arch of the aorta, and to changes in the myocardium, and sympathectomy could not be expected to relieve these pathological changes. Any benefit that is derived here must result from an interruption of the afferent sensory fibers.

Perivascular Sympathectomy has been advocated by Jonnesco and Leriche for Raynaud's disease, endarteritis obliterans and arteriosclerosis. Here the results have been variable and no assurance can be given prior to operation. The most that can be expected is to relieve the arterial spasm, or to interrupt the sensory impulses, causing the pain.

Bronchial asthma, non-united fractures and tuberculous arthritis are among the numerous other conditions for which sympathetic surgery has been attempted. Congenital idiopathic dilatation of the colon is, I believe, the latest condition for which sympathectomy has been tried. The results obtained in two cases by Judd and Adson stand out as a real achievement.

A proper understanding of our present day knowledge of the sympathetic nervous system, the various operations which are performed upon it, and the numerous diseases for which relief is thereby sought requires intensive individual study. There is no doubt that surgery is offering a means of clarifying and enlarging our knowledge concerning the sympathetic system. Whereas the results are as yet variable and uncertain, it must be remembered that most of the diseases which have thus been treated have heretofore been incurable. Any procedure that relieves some of these and offers hope to others is certainly worth while.

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TREATMENT OF CHRONIC PELVIC INFLAMMATORY DISEASE

By D. T. Tayloe, Jr., M.D., F.A.C.S.

Chronic pelvic inflammatory disease is one of the commonest surgical conditions with which we have to deal. As gonorrheal infection is responsible for at least 80 per cent of pelvic inflammation, and the problems encountered in our efforts to establish a permanent cure are so numerous I think it well worthwhile to confine my few remarks to the surgical

treatment of this particular type of inflammation. The etiology, symptomatology, and pathology are well established and generally accepted, but the treatment of chronic pelvic inflammation continues to give endless trouble. Of course, the best treatment for any disease is its prevention, but regardless of how carefully and cautiously these patients are treated in the beginning, invasion of the pelvic organs in the majority of instances seems inevitable. The operative mortality in chronic pelvic inflammatory diseases is reasonably low, but the morbidity is unreasonably high. This, of course, is due chiefly to the type of disease with which we are dealing and its marked resistance to treatment, hence the most mutilating operations are sometimes imperative. In many instances, however, much better results can be obtained by less radical but more complete and persistent treatment. There is no disease with which we have to deal that requires more surgical judgment and experience than the judicious handling of these patients. Unfortunately, pelvic inflammatory disease is most frequently seen in the young childbearing women, hence conservative surgery must necessarily be practiced. While radical surgery will free the patient from the local disease, it is frequently productive of a condition even worse than the disease for which it was intended to cure, that is the premature surgical menopause.

The ideal time for surgical interference in these cases is during the quiescent period of the chronic stage of the disease. At this time the operation is less difficult to perform, the extent of the pathology can be more accurately determined, postoperative convalescence is more pleasant, and the mortality is lowest. The type of operation to be done is influenced by the extent of the disease, age, social and financial status of the patient, and the desire for children. Yet, with all these factors in mind, we are forced to remember that the one great thing these patients are seeking is good health and freedom from their symptoms. Of course, when the patients are approaching the climateric period, more radical surgery can be employed and better final results obtained, with somewhat less subsequent reaction from the loss of the reproductive organs. Numerous plastic operations on the uterus and its appendages have been devised, but it is generally accepted that plastic surgery in gonorrheal disease is highly unsatisfactory and is only courting future trouble, either in the form of a recurrence of the disease or predisposing to the development of ectopic pregnancies. The importance of humane and conservative surgery in the treatment of chronic pelvic inflammatory disease cannot be over-emphasized, but at the same time too much conservatism, like too much of anything, is dangerous, and we should bear in mind that repeated operations are not enjoyable or economic things. If at the time of operation we find one tube and ovary diseased and the other apparently normal, certainly the good tube should be spared, even though we realize the great likelihood of future involvement. A tube thus left is frequently responsible for a normal pregnancy and a full term delivery, but if a tube is definitely though slightly diseased it should be removed, as it is sure

to give rise to future trouble. As Dr. Charles Norris says, "Remove the doubtful tube, and preserve the doubtful ovary."

In many of the cases of chronic pelvic inflammatory disease, one or both ovaries can be spared, even though the tubes must be sacrificed. It is well to remember that in gonorrheal infection the ovaries are primarily the seat of peri-oophoritis, and frequently after the adjoining diseased tube is removed the ovary will recover. If an ovary is totally destroyed by abscess or diffuse oophoritis it should be removed in its entirety. Resection of ovaries in gonorrheal infection as a whole has proven unsatisfactory and most likely will lead to subsequent trouble. Of course, the removal of a simple solitary retention cyst is permissable and advisable. In practicing ovarian conservation it is important to avoid interferring with the normal blood supply. In removing the adjoining tube the line of incision should be carried as near the tube as possible, controlling the hemorrhage with a continuous suture of small catgut and avoid ligation of the tissue in mass. Equally as important as the preservation of the normal blood supply is maintaining the ovary in as nearly its normal position as possible. If the ovary becomes prolapsed, chronic cystic degeneration is most likely to occur, or the ovary due to malposition will give rise to symptoms demanding its removal. I have personally had no experience with any of the grafting operations on ovaries, but it seems to me that any type of ovarian circulation that can be maintained is better than any that we can create. In the event that the disease has progressed to the extent that both tubes and ovaries have been totally destroyed and demand removal, it is questionable as to whether it isn't advisable to remove the uterus also, as it is apt to assume a malposition and be productive of troublesome symptoms. If one ovary is spared and it is necessary to remove the uterus, it seems of advantage to leave a small portion of the lower uterine segment with its endometrium, as there is supposed to be some definite relationship between the ovaries and the endometrium. These patients frequently menstruate regularly, though scantily, for a number of years.

One of the most important and essential factors in establishing a permanent cure in this type of infection is the cleaning up of the lesion in the lower genital tract. The failure to institute the most radical treatment of these local lesions is one of the commonest causes of the persistence of symptoms after operation. Regardless of how complete the pelvic surgery might have been, if the lower genital tract is neglected the ultimate results are frequently disappointing. Numerous patients are frequently subjected to most radical pelvic surgery, being deprived of their reproductive organs entirely and discharged from the hospital with a profuse, foul leucorrhea, just as highly infectious as they ever were, and if anything worse than they were before operation. Even if we have been able to preserve a tube and ovary at the time of operation, if the lesions of the lower genital tract are neglected, ascending infection is almost sure to occur and eventually destroy the organs that we have tried

to preserve. Barthelens glands, Skenes tubules and the cervix are the common harboring places for the gonococci and the diseases that result in these localities are markedly resistant to all kinds of simple palliative measures. Radical treatment of these lesions should be employed. Barthelens glands are best treated by total excision. The glands of the cervix should be destroyed with the electric cautery. In the event the uterus has been removed, the mucus membrane of the cervical canal should be destroyed by the cautery or cored out from above the time of the pelvic operation. If Skenes tubules are involved they should receive the same treatment as the cervix. When these patients are discharged from the hospital, they are advised to return from time to time for examination. If the leucorrhea still persists, the above treatment is repeated.

In carrying out this vigorous and persistent treatment of the lesions of the lower genital tract, our present cases have been very much more gratifying than in the past.

PANCREATITIS

By Foy Roberson, M.D., Durham

The question of pancreatitis has held the attention of surgeons since 1889, when Reginald Fitz of Boston presented his classic paper on pancreatitis. However, most of the work of Fitz was done at the post-mortem table and his reports were rather discouraging. Since that time a rather large amount of literature on the subject of pancreatitis and pancreatic surgery has accumulated.

The disease is probably more common than is generally thought, especially the chronic form. In this paper we propose to discuss mainly acute pancreatitis.

For convenience, pancreatitis may be divided into two general classes: (1) Acute pancreatitis; (2) Chronic pancreatitis; and the acute may be further subdivided into the following: Gangrenous, hemorrhagic, and suppurative. For some reason in "acute abdominal" conditions acute pancreatitis is not often thought of in making a diagnosis. We are accustomed to think of acute appendicitis; acute cholecystitis and acute perforations of the viscera, acute intestinal obstructions and to this list should be added acute pancreatitis; for while the condition is not so common as some of the others, yet it is frequent enough, and the ultimate recovery of the victim depends so much on an early diagnosis, that surgeons should always bear it in mind. No doubt many of the sudden fatalities in so-called "acute indigestion" are due to acute pancreatitis, and possibly many of the patients succumb before any operative procedure is done. The attacks frequently appear like a clap of thunder out of a clear sky, and the patient is immediately struck down in profound shock and the majority of cases will die in the very early stages of the disease, unless surgical relief is at hand. However, a few cases will survive the early onset and enter into a sub-acute stage when the condition either

subsides or an abscess of the pancreas may form. Should the patient be so fortunate as to reach this sub-acute stage the percentage of recoveries will be larger than in the more fulminating gangrenous and hemorrhagic types.

As to the etiology of acute pancreatitis there are three very definite theories.

Firstly, the lymphatic theory presented by Klippel[1] in 1889 and later added to in 1908 by Maugeret.[2] The lymphatic idea is based mostly on clinical and anatomical evidence and would have us believe that pancreatitis is always secondary to some other focus, usually the gall-bladder, but probably the appendix or the duodenum and that the pancreas is affected through lymphatic extension from one of these diseased organs. Opie[3] advanced the idea that acute pancreatitis usually followed a mechanical obstruction in the shape of a stone at the ampulla of Vater or a spasmodic contraction of the sphincter of Oddi. He held that by such mechanical obstruction infected bile was forced into the pancreatic duct from the common bile duct, one continuous passage being formed by the obstruction. No doubt some cases of acute pancreatitis are caused in this way, because cases have been operated upon when just such a condition was found. However, the work of Mann and Giordana[4] of the Mayo Clinic who examined about two hundred consecutive autopsies and showed that in only about 4 per cent was it anatomically possible to cause such an obstruction, on account of the fact that the two ducts frequently had separate openings, or that the openings were so arranged that the two ducts could not be formed into one continuous channel. They also experimented with goats where the pancreatic duct empties directly into the common bile duct and were unable to produce acute pancreatitis to any marked degree. Stephen Watts[5] of the University of Virginia believes that the condition is more of a chemical thing rather than an infection, and believes that the destruction of the pancreas is due to the action of the enzyme trypsin, which turns on its host and digests it with the alarming symptoms familiar in acute pancreatitis. However, before such action could take place it would be necessary for the trypsinogen of the pancreas to be acted upon by the duodenal agent enterokinase, converting it into trypsin. In order for such a procedure to take place it would be necessary for the duodenal contents to be forced into the pancreatic duct. It is quite possible that all of the above theories have their place and that the cases of pancreatitis are oftentimes caused by one or all of them; the fact remains that in about 60 per cent of cases of pancreatitis the gall-bladder is found diseased, which, of course, would give more support to the lymphatic theory.

Now as to the pathology of acute pancreatitis; upon opening the abdomen there may be found a general congestion of the upper abdominal contents, frequently a thin bloody fluid is present, or there may even be pure blood in the abdominal cavity. In the majority of cases areas of fat necrosis may be seen about the omentum and in the fatty tissue adja-

cent to the pancreas. The pancreas is thick, swollen and adenomatous, and other organs such as the gall-bladder, duodenum and appendix may be diseased, and one should not be mislead or satisfied at finding an acute condition of one of these organs when symptoms referable to the pancreas were present before the incision was made. In a good many cases, however, neither is the gall-bladder or the appendix involved. Indeed cases of acute pancreatitis have been reported after cholecystectomy and appendectomy have been done, which would tend to eliminate the lymphatic route as the sole cause of pancreatitis.

SYMPTOMS

Monyihan[6] believes that the diagnosis of pancreatitis should always be made, because the symptoms are usually so pronounced, the chief of which is pain of unusual and intolerable character. The patient is rather suddenly struck down with this violent pain. He may present a rather dusky bluish hue and is in profound shock, nausea and vomiting are usually much in evidence. It is in this stage of acute pancreatitis that relief must be offered, in the ultra acute cases the damage done is so rapid and so fatal that unless operative relief is at hand the patient will die.

There is another group of cases in which the symptoms are not so acute. There is a rather sudden onset with severe pain, nausea and vomiting, duskiness and a degree of shock, and even these cases may succumb in a few hours, but they frequently enter into sub-acute stage, and have a pretty good chance of recovery.

The symptoms of acute pancreatitis are somewhat apart from other intra-abdominal calamities. The patient is frequently uncertain as just where to locate the pain, and the tenderness may be indefinite or general. There is frequently marked abdominal distension, and being accompanied by nausea and vomiting is suggestive of obstruction or peritonitis. There is not usually the board-like rigidity of duodenal perforations, and there is not a slow full pulse seen in the early stages of intestinal obstruction or perforations of the duodenum. In the ultra acute cases the leucocyte count is not usually high at first. One of my own cases had a leucocyte count of 11,000 when first seen. Two other cases that advanced to the sub-acute stage ran rather high leucocyte counts.

TREATMENT

Undoubtedly a certain number of cases of acute pancreatitis get well without operation, but the majority will die. The mortality in the ultra acute type is probably more than 50 per cent. Of those who advance to the sub-acute stage the mortality is probably around 25 per cent. There is just as much difference of opinion as what operative procedure should be done as there is in regard to the etiology of pancreatitis.

Of course, in operating for acute pancreatitis the first thing to attend to is the pancreas, which should either be approached through the gastro-

omentum or the gastro-colic omentum. Should there be any areas of fluctuation they should be opened and drained, should there be only swelling and induration it is well to make incisions into the capsule of the pancreas in order to relieve the tension and drainage should be instituted. If the other organs such as the gall-bladder, appendix or duodenum are involved, of course, they should be treated if the patient's condition will permit, and as the gall-bladder is always involved in about 60 per cent of the cases it frequently has to be looked after. One can either drain the gall-bladder, removing any stones, or do cholecystectomy and drain the common duct, and of course, any common duct stones removed. However, hard and fast rules cannot be laid down for the exact operative treatment in cases of pancreatitis, and one must be familiar with the pathology to be expected, and there will always be plenty of room to exercise one's surgical judgment.

CONCLUSIONS

1. Acute pancreatitis is more frequent than generally supposed and should always be thought of in acute abdominal conditions, especially of a very severe type.
2. The exact etiology has not been established, but is possibly due to
   a. Lymphatic extension. Possibly 60 to 70 per cent of the cases are secondary to cholecystitis and infection is carried to the pancreas through the lymphatics.
   b. Infected bile forced into the pancreatic duct.
   c. Duodenal contents forced into the pancreatic duct.
3. The onset in pancreatitis is usually very sudden and is ushered in by violent pain, nausea, vomiting and shock; generalized abdominal distension and tenderness and slight cyanosis of the skin.
4. The treatment consists of incisions and drainage into the pancreas and possibly cholecystostomy, or possibly cholecystectomy with drainage of the common duct.

DIVERTICULA OF THE DUODENUM

By Russell O. Lyday, M.D., Greensboro

It was in the year 1761 that Morgagni first described and demonstrated on the cadaver the condition now known as diverticulum of the duodenum. Baldwin, in 1911, collected sixty-seven cases from the literature and added fifteen that he found in 105 necropsies. This high incidence of 14 per cent in routine autopsies has never been paralleled or approximately approached by any other observer. Case, who first observed these pouch-like projections in the wall of the duodenum by X-ray, reported four cases in the Scientific Exhibit of the American Medical Association in 1913.

Classification: These dilated saccules are classified under two main groups; i.e., Congenital and Acquired, each of which is subdivided into True and False Diverticula. Most duodenal diverticula, especially those

in the second portion of the duodenum—which group we are mainly concerned with in this paper—are of developmental origin. In nearly every instance, the pouch is in close proximity to the common bile duct and where various structures such as the liver, pancreas, and common bile duct have been formed as outgrowths from the canal in the development of the human embryo. Other theories have been advanced to explain the process by which they may be acquired; namely, redundancy of the duodenal wall with increased intra-duodenal pressure, weakened areas in the wall, traction from other organs, adhesions produced by upper abdominal inflammatory processes, etc.

Since the majority have been found in individuals past middle age, and since change in character and size of these pouches has been observed in subsequent examinations of the same individual, one is led to believe that not all diverticula are of developmental origin.

Various gross and microscopic studies have been described which apparently prove that some are true and that others are false, or pseudo-diverticula. If the pouch shows a wide base with the muscularis extending over the fundus, with the presence of normal villi and intestinal glands, one may be justified in considering it a false, or pseudo-diverticulum.

Frequency: Case reported eighty-five cases in 6,847 routine barium meal examinations, or an incidence of 1.1 per cent. Nagel, on the other hand, reported a frequency of 2.2 per cent in a large series of necropsies. Larimore and Graham found 19 in a series of 3,446 examinations of the gastro-intestinal tract by the X-ray. We must conclude from these and other statistics that this condition is more frequently found in routine autopsies than in routine roentgenologic studies, showing that many may be overlooked even by the most careful roentgenologist.

Location: As previously stated, the region of the duodenum that most frequently shows this abnormality is the mesenteric border of the second portion, in fairly close proximity to the common bile duct. It is estimated that over 50 per cent are located here, giving it the term "Perivaterian." Next in frequency is the third portion, while the first, or ascending portion, is almost as rarely involved as the fourth portion. Diverticula of the first portion, however, are more likely to be of an acquired nature, being often the result of an inflammatory process, such as duodenal ulcer, yet these diverticula are apparently not directly involved in the inflammatory process, according to Hargis and Robertson.

Symptoms: There are no symptoms by which a diagnosis can be made preoperatively without the aid of the roentgenologist. In those producing symptoms, the patient may complain of a dull pain or a distressed feeling in the epigastrium two or three hours after meals, and these symptoms are usually not relieved by the taking of food or soda. Occasionally, the patient may complain of nausea or vomiting, or, perhaps, regurgitation of sour fluid and other symptoms suggestive of peptic ulcer may be present. Usually localized tenderness is not marked.

TREATMENT

Medical. The type of medical treatment should be determined by the character of the discomfort or distress produced by the lesion.

Surgical. In the presence of localized tenderness, an unduly long period of retention of material in the sac, a history suggestive of recurring attacks of diverticulitis or obstruction from pressure of the sac, and especially if no other pathology can be found clinically or roentgenologically to explain the symptoms, operation should be advised.

In operating for this condition, one should bear in mind the difficulties encountered in locating and exposing some of these diverticula, particularly if adhesions are marked in the upper abdomen, or if the pouch is embedded in the pancreas. If the sac is small, it may be inverted into the lumen of the duodenum; but if it is large, it should be trimmed at the base and the edges inverted. When mobilizing seems to be extremely difficult or hazardous, it may be advisable to deal with it in an indirect way by performing a posterior gastro-enterostomy.

In a personal communication with Dr. D. C. Balfour of the Mayo Clinic, he said: "Although such conditions are occasionally encountered in the fluoroscopic room, we have rarely found surgery to be advisable. The diverticula which do come to operation are those associated with lesions, usually duodenal ulcer. It is most unlikely that a diverticulum of the second portion of the duodenum will give any serious trouble and the surgical approach to the average diverticulum is such as to make the risk of operation much more than the risk of any complication that might develop from the diverticulum."

Within the past two years I have encountered three cases in the routine of practice.

CASE REPORTS

Mrs. C. Age 53. For the past four years this patient has suffered with attacks of gas, bloating, belching, and right upper abdominal discomfort. Frequently these attacks come at night. Soda and brandy help, but it is often necessary to take two or three glasses of warm soda water to wash out the stomach before relief is obtained. Sometimes a hypodermic is necessary. A sick headache is occasionally associated. Physical examination showed definite tenderness over the gall-bladder region. The gastric acids were normal. Graham-Cole studies of the gall-bladder showed only a faint shadow which did not change materially on ingestion of fats. Gastro-intestinal study showed ptosis of the stomach, a diverticulum of the second portion of the duodenum, and multiple diverticula of the colon.

At operation a contracted gall-bladder, filled with stones, was found lying beneath an adherent colon and duodenum. The structures of the right upper abdomen were matted together by a dense network of adhesions. Since the diverticulum did not readily come into view, and since the pathology already found seemed the most likely cause of her symptoms, I made no further attempt to expose the sac.

Follow-up records show that this patient still has occasional attacks of "spasms of the stomach," as she calls them, which may require gastric lavage for relief..

Mrs. H. W. Age 61. Sister of above patient. This patient has typical attacks of gall-bladder colic, the first attack dating back to a pregnancy forty years ago. She also complains of a qualitative food distress which is also characteristic of cholecystitis

X-ray examination showed a poorly functioning gall-bladder which contained stones, a diverticulum of the second portion of the duodenum, and multiple diverticula of the colon.

Mr. S. J. Age 40. For the past four years this patient has suffered from periodic attacks of epigastric distress and pain, the pain at times being shooting in character, at other times amounting to a dull ache. There was some seasonal variation to the trouble, and the distress was much more pronounced when the stomach was empty. Some relief was obtained by the taking of food or soda. There was no nausea, vomiting, or constipation. Gastric analysis showed a rather marked hyperacidity. Dye examination of the gall bladder revealed good function. With the exception of a moderately enlarged duodenal bulb, a diverticulum of the second portion of the duodenum and an appendix which was slightly tender to deep palpation and contained small concretions, the gastro-intestinal study was negative.

By following the usual hyperacidity diet, and taking alkalis in addition, this patient's condition improved satisfactorily.

DISCUSSION

Dr. B. E. Rhudy, (Greensboro): I have enjoyed hearing Dr. Lyday read his paper. He has reviewed the literature and has dwelt somewhat upon the classification as well as the treatment of diverticulum. I shall therefore not attempt to discuss either of these phases of the subject but propose to discuss diverticulum of the duodenum from a roentgenologist's standpoint. I also wish to show some slides of a few cases which I have found in routine gastro-intestinal studies during the last several months.

Diverticulum, or diverticulosis of the duodenum, is not as rare as is commonly supposed; I have found it to be present in slightly more than four per cent of all routine X-ray studies of the gastro-intestinal tract within the last eighteen months. Usually there are no definite or so-called characteristic symptoms that cause me to look for this particular condition, but it has been found during routine studies. While a higher percentage of cases reported have been found at autopsy than have been found by the roentgenologist, it has been my experience, and I am sure it has been the experience of others, that a diverticulum ordinarily is not a difficult condition to visualize during a careful roentgenoscopic study, especially of the second or descending portion of the duodenum.

Of my cases, the youngest was 37 year of age and the oldest 64, and there was an equal number of males and females. In one case the gall-bladder had been removed two years prior to the study, and in one a gall bladder functional study was not made. In all the others, except one, the gall bladder functional study either was definite or was suggestive of gall-bladder pathology or impaired function of the biliary system. Only one was interpreted as most probably that of a perforated ulcer into the head of the pancreas, with adhesions.

Only two of my cases have been subjected to operation, neither of which have had that portion of the duodenum explored, apparently sufficient pathology having been found in each case to account for the patient's symptoms. In the case of the patient who had had her gall-bladder, containing calculi, removed two years prior to this study but who

was still having symptoms not unlike those prior to operation, the findings were very suggestive of a diverticulitis. In none of these cases with diverticula was an ulcer, either of the stomach or duodenum, found. In two of the cases (sisters) small diverticula of the distal part of the descending colon and sigmoid were found. In the one case in which, on operation, the gall-bladder containing calculi was removed and extensive adhesions released a subsequent study was made because the patient has had recurrent attacks not unlike those of pylorospasm. The diverticulum was found to be unchanged; there is evidence of some dilatation of the first part of the duodenum proximal to the diverticulum; and it is the opinion of the examiner that some kind of an operation will have to be done to relieve the patient of the apparent chronic obstruction.

THE IMPORTANCE OF EARLY DIAGNOSIS AND TREATMENT OF DISEASES OF THE THYROID

By W. H. Sprunt, Jr., M.D., Winston-Salem

In many goitre patients that come to operation, possibly in over 50 per cent, the goitre has been present long enough to have done definite irreparable damage. This is due to several factors, one of the most important of which is the insidiousness of certain types of goitre. A second factor is the doctor who merely takes a look at the neck and says, "yes, you have a little goitre but it is not giving you any trouble just now. Forget it."

The object of this paper is to urge earlier recognition and diagnosis, with prompt treatment when treatment is indicated. This can probably best be done by giving a brief summary of the different types of goitre, their symptoms, prognosis and treatment.

For years there has been much diversity of opinion about the classification of goitres. For the present discussion, Plummer's classification will serve admirably.

Plummer divides goitres into colloid, simple adenoma, toxic adenoma (or adenoma with hyperthyroidism), and exophthalmic.

In colloid goitre there is a soft diffuse, symmetrical enlargement of the thyroid. This type of goitre tends to occur most commonly in young girls at or about the time of the establishment of menstruation, and also frequently occurs during pregnancy. This type also occurs in the male but the incidence here is much less.

Etiology. As has been remarked, this type of goitre is most apt to occur at a time when there is more demand on the thyroid for secretion, viz, during the establishment of menstruation and during pregnancy. It has been repeatedly shown that this enlargement is dependent primarily on a lack of iodine. To this must usually be added infection. The source of the infection is most commonly found in the tonsils.

The diagnosis is usually easy. The neck is full and symmetrical. On palpation a diffuse symmetrical enlargement of the thyroid can be made

out. The patient is frequently over weight and sluggish, and may present definite symptoms of hypothyroidism. The pulse may be fast but is usually either normal or slightly under normal. The B. M. R. is either normal or subnormal.

Let us now consider the prognosis in a girl of say 13 to 15 who has developed a colloid goitre, and who does not seem to be suffering any, or at most very little from it. If allowed to go on without treatment, she has about 50 per cent chance of the enlargement disappearing by the time that she is 20. What becomes of the rest? Most of them persist and later form the bulk of the adenomatous cases that come to surgery in the late thirties or early forties. It is with the idea of preventing this later occurrence that treatment is urged for the young girl who is unfortunate enough to develop a colloid goitre.

Treatment should consist of first, removal of tonsils, if this has not already been done. Small doses of either iodine or thyroid extract given intermitently over a period of several months. In the vast majority of cases this will be sufficient to cause a subsidence of the enlargement. If the patient has already reached the age of 20 very little can be done to cause a recession of the enlargement. In these cases, unless the symptoms demand surgery it is best to clear up foci of infection and then to postpone surgery until the patient is near thirty years of age. It is during this period of growth that thyroid is most in demand and it is well to wait until at least the late twenties before removing the goitre. If adenomata begin to develop surgery should be resorted to at once.

The so-called simple adenoma of the thyroid is a nodular type of goitre which is supposed to be inactive. I say supposed to be inactive, for it is frequently considered that if the metabolism is not elevated the goitre is doing no harm. Personally I feel that there is no such thing as an adenomatous goitre that does not cause some change which is detrimental to the patient.

The diagnosis of simple adenoma depends on the finding of a nodular enlargement of the thyroid, without symptoms of hyperthyroidism. It is usually the successor to the colloid type. A typical history being that the patient had a diffuse enlargement of the neck during childhood, which got a little smaller at about twenty years of age, and then gradually assumed a nodular appearance. It is this type of goiter that is most insidious.

The prognosis in this type of goitre is fairly certain. If it is not removed, it tends to gradually get larger, areas of hyperplasia appear, and the metabolism increases until definite hyperthyroidism is present. This may be deferred for years, and instead of the patient being hyperthyroid, we find a patient who has some little difficulty with her heart, and kidneys, but as the B. M. R. is normal she is frequently told that the thyroid has nothing to do with it.

It is not uncommon to see patients with adenomata whose B. M. R. is normal and who are being treated for a mild recurrent cardiac decompensation, whose symptoms are greatly helped if not entirely cured by removal of the goitre.

In many of these the goitre is not the primary cause of their disability but is apparently the straw that breaks the camel's back.

In these patients it is not uncommon to see gall-bladder conditions associated. Just what connection there may be between adenomata of the thyroid and chronic cholecystitis, if any, I am not prepared to say, but it is not uncommon to find both existing in the same patient, apparently each making the other worse.

For these reasons we feel that adenomata of the thyroid demands prompt treatment, and by treatment is meant thyroidectomy. To advise treatment for adenomata other than surgery is merely postponing the recovery of the patient, and giving the process a chance to do further damage. I do not mean that the operation should be considered an emergency one, no goitre operation is ever an emergency, but that as soon as convenient to the patient she should have a resection of the thyroid.

When adenomata of the thyroid become definitely hyperthyroid, there is little difference of opinion about the necessity of treatment and here again surgery is the only treatment to be considered. When a patient begins to lose weight, in spite of an excellent appetite, perspires freely, develops a tremor tachycardia, etc., in short, when definite symptoms of hyperthyroidism develop, the sooner the patient is gotten ready for operation and has a thyroidectomy performed, the sooner will the patient be restored to normal.

Toxic adenomata that do not receive proper attention soon cause damage to the heart which cannot be wholly restored even if a thyroidectomy is done later.

In the frank text book case of exophthalmic goitre, there is no difficulty with the diagnosis, and very little difference of opinion about the treatment. For while a few are still recommending X-ray or radium, most have fortunately realized that in the vast majority of cases anything but surgery is only palliative.

It is to the early cases of exophthalmic goitre, before the symptoms have become marked, I would call your attention. In the early stages these patients will frequently present the picture of a nervous, possibly irritable individual, who does not complain, but on the other hand frequently says that he is feeling fine except that he is nervous. By careful questioning it can be brought out that he sleeps poorly, has difficulty concentrating, is restless, tires easily, and has one to three or four bowel movements daily.

On examination, he will probably be surprised to find that he has lost several pounds in the last few weeks. The pulse rate will be elevated, the skin moist, reflexes slightly exaggerated, slight tremor of the hands. In the very early cases, a rapid pulse may be all that will be found. The

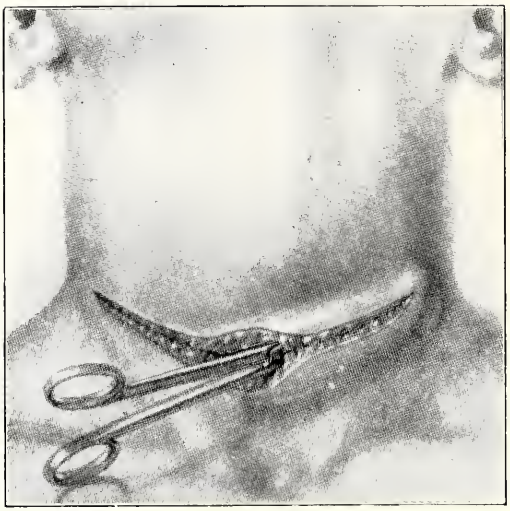

Fig. I. Showing incision made through skin but not to subcutaneous fat. Platysma raised by blunt scissors without damage to the large veins on anterior muscles of neck. In most of the cases incision penetrates only half way through skin and does not show subcutaneous fat as shown in illustration. (After Lahey.)

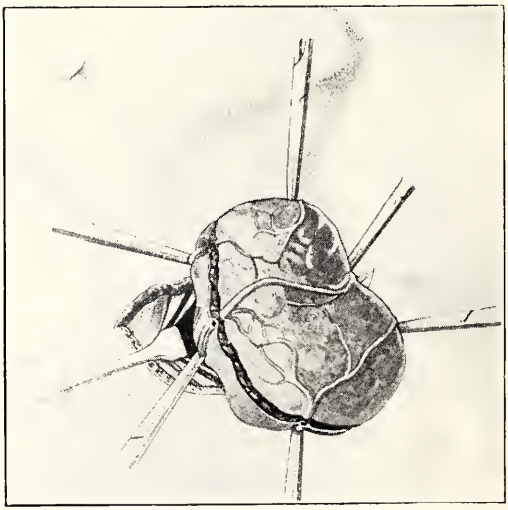

Fig. II. Lobe delivered. True capsule incised, posterior surface being preserved (dangerous zone). (After de Quervain)

thyroid is usually definitely enlarged but in the early stages there may be so little enlargement as to make it doubtful. In these cases, estimation of the basal metabolic rate is of inestimable value. Frequently, it is necessary to repeat the test several times.

Once the diagnosis of exophthalmic goitre is made, the further procedure is very definite. The patient must first be told that operation is necessary, and his consent received before going on with any treatment. Once he has given his consent he should be put at rest in bed, given Lugol's solution, gtts. X three times a day and put on full diet. After ten days to two weeks when he has reached the maximum improvement as shown both by clinical examination and by the metabolic test, he should have a thyroidectomy. If a patient with exophthalmic goitre is put to bed without having given his consent to operation, he is very apt to feel so much better after ten days to two weeks in bed that he will refuse to be operated on, and then in a short time is as bad off as he was before, worse in fact, for the iodine will frequently not be as efficacious the second time as it was the first.

Let us now look for a minute at the prognosis of the patient with exophthalmic goitre who is not operated on. He will usually go through a rather mild attack of hyperthyroidism, lasting a varying length of time, and then will apparently recover completely from it, so that he thinks he is well. In a short time he will have a second attack, which will be slightly worse than the first one. This will be repeated from time to time, gradually getting worse, until the heart has been so damaged that he is a helpless invalid, and lives the life of a cardiac decompensation case.

Even after this stage has been reached much good can be done by removing a portion of the thyroid, even though it has to be done in several stages.

In patients with exophthalmic goitre it is extremely important to have their tonsils removed as soon as their condition will warrant it. Recurrent attacks of tonsilitis apparently have a definite bearing on recurrence following operation.

ON THE TECHNIQUE OF THYROIDECTOMY

By Hubert A. Royster, A.B., M.D., Raleigh

Since my part on this program is limited to a discussion of the operative methods in the management of goitre, I shall omit all consideration of other forms of treatment.

Anesthesia. The question of anesthesia naturally comes up first. Each surgeon has his preferences in the choice of an anesthetic. Some still use ether; many continue to employ nitrous oxide or are beginning to substitute ethylene; a few seem pleased with oil-ether in the colon. The large majority, I find, are operating on goitres under local anesthesia, and depending on it more and more. In only one instance during the past five

years has it been necessary in our own work to supplement local with general anesthesia—a small amount of nitrous oxide gas toward the close of the operation.

The advantages of local anesthesia are: It reduces the risk of bronchitis, pneumonia and other respiratory affections; prevents prolonged vomiting; permits control of recurrent laryngeal nerve and trachea during operation; allows early ingestion of food; does away with danger to the heart's action. As in other fields of surgery, local anesthesia here for a stronger reason presupposes a proper temperament in the surgeon and a favorable reaction in the patient. These attributes usually overcome whatever disadvantages there may be. A preliminary injection of morphine with atropine or hyoscine should be given.

In general there are four methods of introducing the local anesthetic:

1. The subcutaneous and subfascial: infiltration of the anesthetic solution in and under the skin along the line of incision and below the deep fascia and muscles in the area of operation. 2. Nerve-trunk injection: first at the middle of the sterno-mastoid muscle and then through the same needle in a radiative direction from that point. 3. The paravertebral: a deep injection of the spinal nerve roots as practiced in so-called regional anesthesis. 4. Infiltration of the perithyroid space in ring fashion, all around, superficial and deep. There are many modifications of these methods and every experienced operator has a way of his own—which he may, and will if he is wise—vary to suit his patient and himself.

Incision. By common consent the "coller" incision or the *incision en cravatte* is universally employed. True, now and then other incisions may be indicated, but since ligations have been largely given up and unilateral lobectomies are rarely done, seldom do we see criss-cross or longitudinal incisions. The placing of the incision across the neck is important. If too high, it will be difficult to expose the lower portion of the gland; if too low, the flap will be too long and ugly adhesive tugging will result. There is no particular line which can be pointed out; much depends upon the shape and size of the gland. I always insist upon dissecting downward the lower flap to the base of the neck just as we carry the upper flap up to the coicoid cartilage. Also I still believe in the slightly curved incision, with convexity downward, in spite of the fact that many of the best surgeons advocate the straight line. In Fig. 1 is shown a suggestion of Lahey's which greatly facilitates lifting the flaps.

Let me say here that in my judgment transverse section of the ribbon muscles of the neck should not be done as a routine procedure. Many times it is not only not necessary but the operation may even be done more easily without it. I was almost on the verge of saying that cutting across the recti abdominis muscles for aid in the removal of a pelvic tumor would be analogous. Actually there is some reason for comparing a thyroidectomy with a hysterectomy—incision, delivery of the tumor, securing the main vessels, stripping off the membrane (peritoneum, posterior capsule) leaving the ovaries (compare the parathyroids) and avoid-

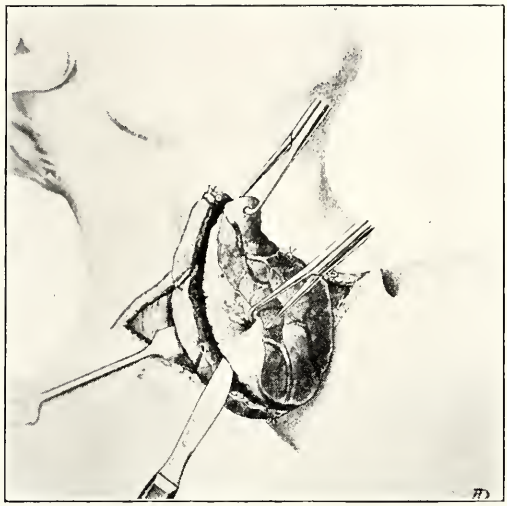

Fig. III. Right lobe brought outside the wound and resected by "melon-slice" method. (From de Quervain.)

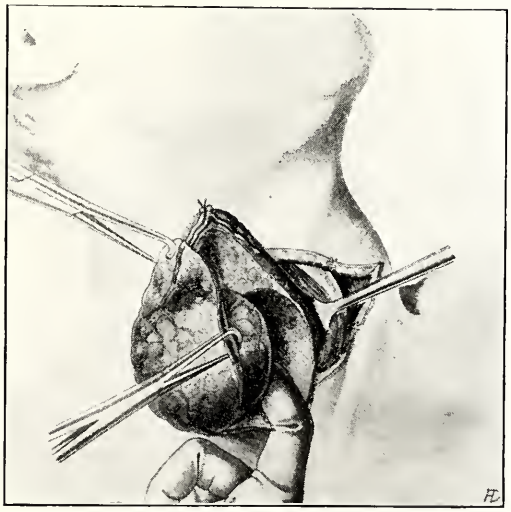

Fig. IV. Typical resection—enucleation. (From de Quervain.)

ing the ureters (suggesting the recurrent nerves). Some surgeons immediately apply forceps and sever the muscles on each side of the neck without any attempt to determine the size, mobility or shape of the thyroid lobes. Curiously enough, in many instances the larger the goitre the less the need for cutting the muscles, for that they are flattened and thinned out by pressure and so are easily stretched over the protruding gland. The difficulties of thyroid surgery are by no means confined to the very large goitres; sometimes quite the reverse happens.

Types of Removal. Within the past five or six years considerable change has taken place in our specific methods of dealing with the goitrous gland at operation. Modes of approach, handling of the structures, the amount to be removed, the details of technique—all have changed more or less, and it may be said in the direction of improvement. At the hands of various surgeons in many places there is an increasing intelligence and a more direct form of action in thyroid surgery. Far more experience, however, is needed on the part of many before a conscientious attack can be consistently made upon a goitre with the same comfort and ease as upon a tumor in certain other regions of the human body. Until that time arrives, as a result of training and cultivated judgment, the hand should be stayed.

Three types of removal of the thyroid are in vogue: 1. Hemithyroidectomy—or lobectomy, the removal of one lobe. This is less popular than it was formerly—and for reasons; it leaves an asymmetrical neck, results in many secondary operations for taking out the opposite lobe. Occasionally this method is indicated, when one lobe is very large and the other atrophied. But even here the remaining lobe may take on active growth when the pressure is released. 2. Enucleation—the shelling out of a single nodule or of a cyst. This may be demanded on one side or both—a well recognized procedure.

One must be sure that the enucleated mass contains all the pathological material, or else a different type of removal is indicated. The plan of enucleation practiced by de Quervain is shown in Figs. 2 and 3.

3. Resection-enucleation, the method of choice in the larger majority of thyroidectomies and the principle of which is employed in one form or another by most surgeons today. It implies the excision of a wedge-shaped portion of both lobes, well away from the trachea on one side and the posterior capsule on the other, avoiding the very appearance of the recurrent laryngeal nerves and the parathyroid nodes. The approach can be made from above, from below, or from either side of the lobe. No set program should be followed because in the individual case it might be expedient to begin at one point or another, according to the ease of manipulation. Usually it will be found comforting to clamp or tie the superior thyroid vessels first, for in that region the posterior capsule can be more readily identified and separated from the gland from above downward both on its inner and outeraspects. Notable authorities, however, insist that it is better to secure the inferior thyroid vessels first, working upward

and inward. Whatever procedure is followed should suggest itself when the gland is exposed to view, making certain at the outset to occlude the main blood supply before proceeding to place additional clamps on the lateral surface of the posterior capsule as far down as may be indicated. The use of as few clamps as possible is to be encouraged; a heavy load of hardware on the neck is not conductive to the patient's comfort, nor does it leave much room for the surgeon's manipulations. The same procedure is carried out on each side. The portion of each lobe to be left nestles deeply alongside the trachea in the trench occupied by the recurrent nerve beyond which there should be no trespassing. The thyroid isthmus is not to be stripped off the trachea or removed at all, unless it is involved in the pathological process, in other words a part of the goitre. If it is large enough to constitute a deformity afterward, it must be resected. But never should it be necessary to peel the trachea clean or even expose it too barely. Too clean a removal is likely to result in collapse of the trachea, disturbances of circulation in its mucous membrane or the leaving of an unsightly depression. The typical resection-enucleation operation according to de Quervain, is depicted in Figs. 4, 5, and 6.

Drainage. In some cases the wound may properly be closed without drainage. Most always, though, there is a considerable oozing of blood or serum which should be allowed to escape. A perfectly dry wound is difficult to obtain. Remnants of gland tissue left behind will exude and very small blood vessels may continue to discharge even after careful hemostoasis. No suturing of the thyroid stumps need be done except to stop bleeding which cannot be controlled in any other way, but, after ligating the areas holding clamps, the capsule may be brought together or sewed over to the thyroid tissue; often the inner flat muscles can be sutured down upon it. When all is done a thin strip of rubber dam is passed from each cavity formerly occupied by the lobes out through the middle of the skin wound. I have tried many other forms of material for drains, but have had most satisfaction from the rubber strips. These must not be removed too soon. After forty-eight hours they should be pulled off one inch and then every other day thereafter until none remains. The guarding safety pin ought to be placed before cutting off the drain beyond it or the rubber tissue may be lost in the neck. Once I had this to happen—and it was troublesome fishing to get it out. If it is considered proper to remove the drainage strips entirely on the second day, or if, indeed, they slip out of themselves, one may wait for the bulging of serum under the skin and provide for its exit by introducing a grooved director through the opening. In fact this may be done as a routine practice instead of the gradual removal of the drain—but the patient generally enjoys it less. Absorption of wound products also is rapid and abrupt, producing a more pronounced reactionary rise of temperature, when drainage is checked early. This drain detail is a question of judgment founded on experience. It has been said that a really good surgeon is one who knows when to put in a drain, and, of equal importance, when to take it out.

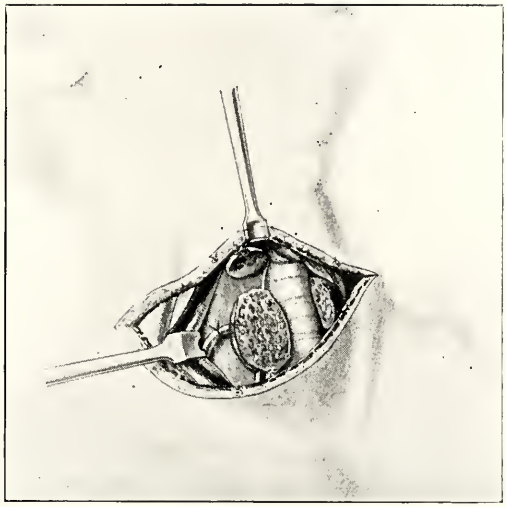

Fig. V. Excision of lobe with ligation of isthmus, showing average amount of gland that may be left. (From de Quervain.)

Fig. VI. Huge colloid goiter, removal of which in 1912 was followed by tetany. (Author's case.)

Closure of the Incision. I have never receded from my pristine practice of using a subcuticular suture of fine catgut for closing the skin incision. It is simple to put in, it is less likely to produce infection, it leaves nothing to be removed, it makes the neatest scar, present and remote. Other kind of suture are used by various surgeons and no doubt, with utmost satisfaction to themselves. I have seen many different methods and materials employed, but none of them has caused me to alter my adherence to the absorbable subcuticular stitch. Minimum scarring should be the final goal. An unsightly neck, even in spite of beads, is a drawback to thyroid surgery, because it may prevent some patient from submitting to a necessary operation. The worst looking scars I have seen were from the use of metal clips, said by their proponents to result from leaving them on too long; and yet I observed two incisions to split apart when the clips were removed according to rule on the second day. Perhaps, as with many events, the fault, if any, may be with the man and not the method.

The Amount of Thyroid Tissue to be Removed. The question of how much of the thyroid gland may safely be removed and how much retained at operation has been discussed over and over again. No mathematical reply can be made. The nearest approach has been the general estimate that three-fourths of the gland may be taken away without producing hypothyroidism. Modifications must be made to tally with the extent of disease manifested in the gland and the symptoms presented by the patient. It is held that the more pathologic the gland, the more sparing we should be with it; while the more toxemia, the more of the gland should be removed. Nothing in surgery is more dependent upon the individual operator's judgment than the decision of this matter. Certainly in the earlier days much too little of the gland was removed, and even at this time the tendency to err is on the side of leaving more than is needful. There is much less danger of a hypo-state from taking away the major portion of the thyroid than there is of leaving behind a part of a lobe which may regenerate and give recurring symptoms or constitute an obvious deformity. In rare instances the remaining tissue may undergo regeneration, even when a maximum removal has been done.

Pitfalls and Accidents. There are three preliminary measures which, if carried out in detail and as a regular rule, may prevent or reduce the number of accidents that may befall the most experienced operator. These are: intelligent *palpation,* expert *laryngoscopy,* and careful *radiography. Palpation* of the goitre is best performed by standing behind the patient and pressing, not with the fingers on both sides at once, but first to one side rather forcibly and then to the other. The relative side and direction of the lobes can thus be grossly determined. From my records, when there was a difference in size, the right lobe was larger in 80 per cent of the patients. *Internal examination of the larynx* enables the surgeon to know the condition of the vocal cords before operation—a very important matter when post-operative laryngeal complications arise. *X-ray films* give generally a good idea of the position of the gland chiefly in its relation to the

trachea. Trouble may be averted by knowing beforehand whether the windpipe is displaced laterally or angulated in the antero-posterior direction; whether the goitrous gland surrounds the trachea or is growing downward into the thorax. Knowledge of these matters beforehand has forestalled many mistakes, while the lack of it has led the unwary into pitfalls.

The common accidents which may happen to any operator are injuries to the trachea, the recurrent laryngeal nerve and the parathyroid glands. The trachea may be subjected to unusual trauma in manipulation, it may be opened by mistake or it may suffer collapse. The latter is by far the most serious accident of the three, requiring an immediate tracheotomy for saving life. In any case efforts should be directed toward the prevention of aspiration of blood into the opening and the edges of the tracheal rings sutured, if cut or torn. Some mode of vapor inhalation is to be installed in the after treatment. The best way to avoid injury to the recurrent nerve is not to look for it, on the ground that "what you don't know won't hurt you." All forceps should be applied during operation in a direction parallel to the trachea and not at a right angle to it. Keeping out of the tracheal trench is safe, but one must also be careful not to injure the nerve high up near the thyroid cartilage. Staying inside the posterior capsule is the sure way not to injure the parathyroid bodies.

Fig. 7 represents the only case of my series in which tetany followed thyroidectomy. It was a very large goitre, operated on twenty-two years ago before attention had been drawn to the importance of preserving the posterior capsule. The patient was treated with calcium lactate and recovered.

A curious freak case is illustrated in Fig 8. The patient, a colored girl, with a large non-toxic adenomatous thyroid, presented a ptosis of the left upper eyelid, accompanied by intense pain. No possible connection between this phenomenon and the thyroid enlargement could be established, but one week after the thyroidectomy the ptosis had entirely disappeared and the pain all but gone.

DISCUSSION

Dr. A. G. Brenizer, (Charlotte): Dr. Sprunt is making a plea for early diagnosis and accurate diagnosis, and I do think it is very important before any treatment is given. Of course, the usual idea is that by giving iodine to the young girl with a small hypertrophy, with a watery colloid of the thyroid gland, that it will rapidly disappear under iodine treatment. My experience has been, down here where goitre is not endemic as it is in other regions that those glands do not disappear under iodine during puberty, as we hoped they might; and in the effort to make them disappear they take more and more iodine, and this simple goitre is pushed into the exophthalmic type. I have had several such cases in very young girls. I do not think iodine should be given indiscriminately or sold by grocery stores or put in the water supply, because of that danger. The

Fig. VII. Large adenomatous thyroid, complicated by ptosis of left, upper eyelid. (Author's case, June, 1911.)

same is true as to adenoma; although an adenoma may be very, very small, a small amount of iodine will push that small adenoma into a very toxic one. I recall one case of an adenoma as big as my thumb in a girl who was getting along very well and was then given iodine and pushed into a very toxic state. She arrived in Charlotte with a pulse of 160, and no preparation could be given her; she had to have the operation under that lashing pulse and with a certain amount of myocarditis. After the operation she finally was stabilized. Adenoma does occur in the young girl; I have seen quite a number in rather young girls, particularly in the intermediate colloid type of goitre. In the young girl you must consider also the possibility of a nucleated adenoma in this simple goitre type, and while you may reduce the size of the gland by giving iodine you may also stir up the adenoma. You may stir up a marked metabolic rate, and very likely the cause is that you have a nucleated adenoma, and that case may come to immediate operation.

I think, as Dr. Sprunt says, adenomata never come to any good. Later on in life these patients have trouble. I think one of the most significant ones I have had was a woman about forty-five years old. She had a goitre when a young girl, but it disappeared. At about forty she became very hyperthyroid; there was no enlargement in the neck, but she had a high metabolic rate and had embarrassment in the way of her heart and hyperthyroid symptoms. When X-rayed she had an enormous adenoma in the chest. So I think these cases should not be given iodine but left alone until you can choose a suitable time for removal of the goitre. I think after twenty treatment with iodine is very speculative; after twenty-five the reduction is not great, and I have been disappointed in it. I would sound a warning not to push it in those glands very hard, because you stand considerable chance of stirring up hyperthyroidism.

As to the exophthalmic goitre, Dr. Sprunt has said that it should be recognized and likely would be. I think very frequently it is not. I think anyone doing goitres and being keenly on the lookout for them and taking metabolisms here and there (frequently when not needed and they turn out to be low) does a lot of useless metabolisms. But when the history shows loss of weight and tremor we get all sorts of diagnoses—nervous breakdown, tuberculosis (frequently there is a little temperature); and they go on in that way until finally the eyes protrude. And you do not always get an exophthalmos, even in very severe hyperthyroidism; and those cases are delayed until they get very toxic and marked damage has been done. When they do find out that is the condition, in spite of you and in spite of all you can do, there is some reproach of the people where she first started. We have gone to the State Hospital at Morganton and operated on a man who was sent there in acute thyroid delirium. With the removal of the gland that disappeared, and he was returned home and is taking care of his wife and children. So those things, though rather rare, should be noted. I think cases of exophthalmic goitre should almost always be regarded as progressive. They get better for a while with X-ray

or rest or whatever treatment you give. Hundreds of different drugs have been suggested, probably none of them any good. The patients go on until they are so damaged that they will not completely recover. When the case is one of outspoken hyperthyroidism I think it should come to surgery.

Dr. Royster's talk covered every phase of the technique and was delivered so beautifully there is very little to be said. I may say this as to his type of enucleation and resection; instead of doing it in the style he has taken, where one or the other lobe is pulled up to the trachea and the capsule stripped back, we have chosen the other way around; we catch the isthmus and strip each lobe from the trachea out. If any of you will try that you will find you have a beautiful control of the neck, because as you pull the gland up you actually cut down on the blood supply, and as you strip the capsule it will shave very prettily and the gland slips right up out of the neck. You have the symmetry that Dr. Royster would get in the operation he has there. I think the objection to removing the lobe alone, as you used to, is not only that you will not get out enough tissue, but there will be asymmetry in the neck; one side of the neck will be enlarged, and the other will sag. It will not be long before the patient will be back, saying the goitre has returned. We do not want our goitre cases to come back, and if you leave enough of the gland in there to cause protrusion you will be accused of having the goitre come back. After the operation, the patient becomes very critical of that neck. As to closing it, I think it ought to be closed with subcutaneous stitches of very fine catgut. Dr. Royster has seen the same thing I have—the beads on each side. Certainly the beads look much worse than the scar of the incision. Patients have a good deal to say about the plastic effect. They get to looking better, and want to get beautiful, so I think you want to pay some attention to the closure.

As to injuries, if you do the operation in the way I have described I think you will not have much difficulty with the parathyroid glands and the laryngeal nerves, because you are seeing the trachea and letting the capsule and glands slip away from you as you cut. You will not see the parathyroid glands, and you don't want to look for them. I do not try to. With this particular type of operation I believe it is not impossible but almost impossible to cut either the recurrent laryngeal nerve or the parathyroid glands. Again, your clamps are not clamping across the nerve but clamping parallel to the nerve. If you will try that I think you will find it much easier; the muscles do not have to be cut, and the final result is very good.

Dr. Donnell B. Cobb, the Chairman, (Goldsboro): There is no question but that in our state goitre is sufficiently prevalent to make it desirable for any surgeon in general practice to be familiar with the methods of removal, so this subject is always timely and interesting.

Dr. F. W. Griffith, (Asheville): How much Lugol's do you use in preparing these cases? Most of us use pretty fair doses, 5, 10, or 15 to 40

minims. I understand one man says 1 minim three times a day accomplishes the same result.

Dr. J. W. Tankersley, (Greensboro): Most of us have come to the conclusion here in Greensboro that we should not use iodine unless we have these patients in the hospital getting ready for operation. We have almost come to the conclusion that goitres are surgical conditions and not medical and that therefore iodine should not be given until the case is in the hands of the surgeon preparatory to operation.

I should like to call attention to Dr. Royster's resume of the operation on goitre as one of the ablest things I have ever heard him give. There is one thing I wish to call to your attention, and that is the line of excision of the gland. I think Dr. Royster will tell you that there is frequently a little too much left and that he does not leave that much gland when resecting. I think the picture is a little bit misleading.

There is something I should like to emphasize, and that is local anesthesia. We do them invariably under local anesthesia, because we feel there is less danger of getting the recurrent laryngeal nerves.

We sew up all our cases with double-o catgut. In four or five days the dressing comes off. The cosmetic effect, I think, is far better than if you use clips or any other method.

Our method of giving the anesthesia is a little different from Dr. Royster's. We use a three-point injection, one at lower line of neck, one at the angle of the jaw, and one midway between. In doing the anesthesia by this method we get good anesthesia, but I should like to give you just one point; if you try it, don't start the operation too quickly, because the anesthetic possibly has not taken effect. Give it a little time, talk to the patient a little before you begin, and give it time to take effect.

Dr. B. C. Willis, (Rocky Mount): One finds occasionally in toxic goitre which is not very large we have a collar growth—the prongs posteriorly pass almost around the trachea. We had such a case, and in attempting to get back to that point we passed a suture to control hemorrhage into the esophagus. I mention that as a possibility, because it has happened to us.

Dr. Royster also spoke about compression or collapse of the trachea. That is an important thing, and it is certainly disconcerting to the surgeon, if the surgeon is getting ready to do the operation under general anesthetic (which, of course, we do not use so much now), to have the patient stop breathing. I had the good fortune to see one of these cases under a master surgeon. He had not had time to get his gloves on. He simply went to this case and made a collar incision, very thoroughly opened up the muscles in the mid line and got on either side of the goitre and pulled outward. The collapse is lateral; it is a narrowing laterally, a compression by lateral force, so if you pull outward you will release it. We also have a collapse of the trachea, as Dr. Royster brought out, anteriorly, in the small goitre. Of course, that is from too vigorous assistance. The assistant is probably

pulling too vigorously forward. Then you will have an anteroposterior collapse. Let the assistant relax some, and that will relieve it.

I should like to call attention to the secondary operation on the colloid adenomas where too much has been left and there has been too much regeneration. I know you are very apt to get a parathyroid, because you do not know how many have been removed in the previous operation. We ought to be very careful, as Dr. Royster says, not to get behind that capsule.

Just one more thing, which Dr. Brenizer brought out in his application of the suggested modification of Dr. Royster's operation; that is, the application of clamps on the posterior capsule, apply the clamps parallel with the nerve. The surgeon under whom I had the good fortune to work never let his assistant apply a clamp at right angles to the trachea. He stated that was the most frequent cause of injury to the recurrent laryngeal nerve. Especially is that true up at the upper pole. You have to pull out the upper pole, and be very careful to separate and get in there or you will at that particular point catch the recurrent laryngeal nerve, which is immediately behind the upper pole, resting against the trachea.

Dr. J. D. Highsmith, (Fayetteville): I certainly think Dr. Sprunt was right in his appeal for early diagnosis and treatment of goitre. Down our way there is still a superstitious belief in regard to goitre; some people think the Lord put them there and they should be allowed to die with them and still carry them. I have seen pretty nearly every complication as a result of these untreated adenomas which become toxic—everything from cardiac decompensation to delirium and acute mania. These cases, in my experience, have not responded at all to Lugol's solution—the toxic adenoma with the cardiac decompensation, and especially those with the acute mania. I have seen three of them.

I should like to ask Dr. Sprunt how he handles the very early cases of exophthalmic goitre; I mean those that present the nervous symptoms, extreme nervousness, tremor, tachycardia, loss of weight, but have no enlargement of the thyroid nor exophthalmos. I do not see how you could very well operate on a case of that kind, because there is no exophthalmos or thyroid enlargement, and certainly there is some doubt as to your diagnosis.

The principal advantage that I have found in the use of regional anesthesia in these cases (I use the paravertebral and nerve block anesthesia) is that you get the most profound muscular relaxation. I think that is one of the principal advantages in this method of anesthesia, making it very seldom necessary to cut the muscle.

Dr. W. H. Sprunt, Jr., (Winston-Salem): I hope I was not misunderstood as advocating the indiscriminate use of iodine in these colloids. I feel that in the very young girl with mild goitre either small doses of iodine or thyroid extract should be tried. In a sufficient number of them to make it worth while, the symptoms will clear up. If results are not obtained in a few months, I think it should be discontinued.

We have had a few cases with slight elevation of the metabolic rate in whom we did not see any enlargement of the thyroid, but invariably when we got inside we found it was enlarged, and the removal of it cleared up the symptoms.

I enjoyed Dr. Royster's paper, but I rather disagree with him as to the use of Michel's clamps. I think if they are removed in twenty-four to forty-eight hours you will get as good results as without them. Personally, I prefer to use them in all cases.

The work of Plummer and Kendall is the last I have heard of. Their idea was that ten drops three times a day would give the maximum benefit. Where iodine had been given for a long time they got more results with fifteen. Personally, I have not found that five drops three times a day gives as good results as ten drops. As to the one drop, I have not had any experience with that at all.

STUDIES IN A FATAL CASE OF THROMBO-ANGITIS OBLITERANS

By R. B. McKnight, M.D., Charlotte

Mr. Chairman and Members of the Section on Surgery:

The reasons for selecting a subject having to do with the vascular diseases of the extremities are threefold: (1) Thrombo-angitis obliterans is by no means a rare disease. One clinic reports three hundred cases observed in a period of five years. During two years I have observed one case of this disease, I know of another doctor in Charlotte who has another case under observation, I have seen two cases of what I think are Raynaud's disease, and I have under observation a young lady suffering with intermittent attacks of extreme coldness in the fingers of one hand. (2) Vascular diseases of the extremities are usually misdiagnosed, especially is this true of Buerger's disease. (3) Studies in a case terminating fatally will not infrequently give one information which is not always found in the literature, particularly is this true in a case in which the prognosis should be considered as reasonably favorable.

Thrombo-angitis obliterans has been described by Buerger and later, more comprehensively perhaps, by Brown, Allen and Mahorner. It was formerly known as presenile, or juvenile, gangrene. It is one of the vascular diseases affecting the extremities and is characterized by claudication, vasomotor disturbances, trophic changes, severe pains—known as rest pains—and frequently gangrene.

The etiology is not clear. It occurs almost exclusively in males (99 per cent) from the second to the fourth decades of life. About half the cases are found to occur in Hebrews. It was formerly thought that the excessive smoking of tobacco was the prime etiological factor; this has been disproved, although the use of smoking tobacco is undoubtedly a contributing factor. Most of the patients will give a history of exposure

to cold and many will have had occupations requiring a good deal of outdoor work. Cases have been reported from the states far south, however, where the climate is always warm. It is probable that there is an infectious basis, and that an infection or bacterial toxic substance is the real etiological factor. There is strong evidence to support this idea, but absolute proof is lacking.

After a study of a large number of amputated limbs, Mahorner has summed up the pathology as follows: "The results of this study suggest that thrombo-angitis obliterans is fundamentally a chronic inflammatory condition of the vessels accompanied by proliferation of the intima and resulting in thrombosis with organization and canalization of the clot, fibrosis of the adventitia and an attempt on the part of the vaso vasorum and other vascular channels to establish a collateral circulation. At times acute inflammation is superimposed on the chronic process. The nerves are involved apparently by virtue of their relationship to the vessels and by ischemia in the distal portions." The pathological physiology, if you will, is brought about by two factors: a primary arterial occlusion and in addition a vasomotor disturbance.

The symptoms run as a rule a fairly uniform course. Fatigue of the calf muscles associated with cold feet, later claudication—cramp-like pains in the calves—may appear. Numbness, tingling and aching frequently precede true claudication. Vasomotor disturbances of a constrictive type appear. There is excessive pallor on elevation and excessive rubor on dependency of the afflicted extremity. Superficial phlebitis frequently occurs and shows a distinct tendency to recur. Probably the most important symptom is the rest pains. These pains are exquisitely severe and perhaps the most demoralizing known to man. They occur in the distal portion usually of the affected extremity. Their cause is unexplained. Four possibilities are offered by other observers: a true neuritis, increase in connective tissue about the nerve trunks, obliteration of nutrient nerve arteries and an anoxemia approaching the threshold of tissue death. Trophic changes are prone to occur, as deformity of the nails, gangrene and gangrenous ulcers. Edema is present in about a third of these cases.

There are several types of the disease, so classified according to their clinical course and the presence or absence of certain symptoms.

The prognosis as to life is probably good; that as to the affected extremity, however, is guarded. Amputation must be determined upon after a most careful study of the individual case and the response of the case to medical treatment.

Roentgen report by Dr. R. H. Lafferty

"We were unable to observe any filling in the anterior tibial artery. The peroneal artery filled normally. The posterior tibial about the middle showed an obstruction and a marked effort at forming collateral circulation for a space of about an inch and a half. The smaller vessels in the ankle show considerable distortion and dilatation."

DIFFERENTIAL DIAGNOSIS OF VASCULAR DISEASE AFFECTING THE EXTREMITIES*

	Thrombo-Angitis Obliterans	Arteriosclerosis	Raynaud's disease and similar conditions	Primary erythromelalgia
Pulsation of arteries	Pulseless 50% Diminshed 45% Normal 5%	Pulseless 50% Diminshed 45% Normal 5%	Normal	Normal
Excessive rubor with elevation	Present	Present	Absent	Absent
Excessive Pallor with elevation	Present	Present	Absent	Absent
Claudication	Usually present	Usually present	Absent	Absent
Gangrene	Common	Common	Rare	Never
Rest pain	Usually very severe	Usually mild	Usually absent	Mild to severe
Type of rest pain	Sharp and stinging	Aching	Absent	Burning
Appearance of gangrenous ulcers	Moist, inflamed discharging	Usually dry	Small punch-out areas**	None
Superficial phlebitis	30% of cases	Absent	Absent	Absent
Age (mostly between)	25 and 45	55 and 85	17 and 35	30 and 50
Sex	Males 99%	Males 90%	Females 95%	Females 70%
Race	Hebrews 50%	Any	Any	Any
Roentgenograms of arteries	Usually negative for sclerosis	Usually positive for sclerosis	Negative	Negative
Color changes following exposure to cold	30%	15 to 20%	Always	None
Temperature of extremities	Low	Low	Low	High
Edema	Frequent	Infrequent	Absent	Absent

Percentages are approximate.

*From "Thrombo-angitis Obliterans," by Brown, Allen and Mahorner.

**In early stages.

The treatment should be conservative. It probably falls within the realms of the internist at first, but there should be a close surgical cooperation. Thrombo-angitis obliterans is a disease which requires a highly individualized study, as the indications for treatment are not clear cut, and are certainly not to be relegated to a routine. For treatment cases fall roughly into five groups, as characterized by: (1) Extensive gangrene with or without rest pains. Amputation is indicated. (2) Mild trophic changes with rest pain. Treatment is medical with lumbar ganglionectomy in suitable cases as a prophylactic measure. If the rest pains are not relieved, then amputation. (3) Mild trophic changes without rest pains. A medical regimen should be instituted with lumbar ganglionectomy in suitable cases. (4) Severe rest pain without trophic changes. Medical treatment. Amputation if no relief from rest pains. (5) No rest pain or trophic changes. Medical treatment. In addition the economic factor is to be considered. Even if there is a strong possibility of cure or marked improvement under medical treatment, months or even years may elapse for such results to be attained. Perhaps it is better to amputate and secure the use of an artificial limb so as to get the patient back to the point where his earning capacity is in part restored.

Medically, there are four methods of attack which should be made in all cases in which this disease is recognized. I doubt if there is any condition in which diagnosis is more essential for proper treatment than in thrombo-angiitis obliterans. (1) Prophylaxis as to the proper care of the nails, avoiding trimming or any contusion thereto; the use of properly fitting shoes; warm hose—every effort to prevent any type of trauma to the part. Tobacco should be markedly restricted. Some advocate that it should be prohibited entirely. A warm climate is advisable. Most of these patients feel better in warm weather. (2) Measures to increase the circulation. Postural exercises are given by elevating the part to an angle of 180 degrees for a minute and lowering it to its most dependent position for an equal length of time. These exercises are given twice daily for a period of about fifteen minutes. Radiant heat may be applied by the use of electric light bulbs placed under a tent into which the leg and foot are placed. Two daily periods of an hour each are sufficient. Contrast baths are of value. These are given by immersing the foot and the leg to the knee in hot water (110 degrees) for a period of one minute, followed by a similar immersion in cold water (40 to 50 degrees) for an equal length of time. Seven or eight alternating immersions are given twice daily. (3) Treatment by the intravenous injection of a non-specific protein. This gives rise to systemic fever and this fever is induced by using typhoid vaccine in large doses. Begin with 50 million killed organisms and increase up to 200 or 300 million killed organisms. An injection should be made every three or four days. At the same time the vasomotor index should be determined. This done by subtracting the increase in blood temperature from the increase in skin temperature (of the affected limb) and dividing by the increase in blood temperature.

$$\frac{\text{Increase in skin temperature} - \text{increase in blood temperature}}{\text{Increase in blood temperature}} = \text{Vasomotor Index}$$

A vasomotor index of 1.0 or under is a contraindication for lumbar ganglionectomy for reasons that will be given later. The increased blood supply to the part by the induction of systemic fever contributes almost miraculously to the relief of pain in the majority of cases. The exact mechanism is not understood. (4) Special attention to foci should be given. It is especially urged that careful attention be paid the prostate, since the disease is almost exclusively limited to males.

Surgical treatment may be by prophylaxis or amputation. The prophylactic surgical treatment is limited to the periarterial sympathectomy as performed by Lariche or to lumbar sympathectomy as advised by Adson in selected cases. Leriche based the operation of stripping the adventitia from the femoral artery on the idea that the vasomotor nerves reached the distal parts of the extremities along the adventitial coat of the main vessels, and by destroying a segment of the adventitia interference would be produced in the vasomotor paths with a resulting vasodilatation. The results of this operation have been disappointing. Operations on the lumbar sympathetic trunks have clear cut indications, about one case in seven meeting such indications. If the demonstration of adequate vasodilatation by the induction of systemic fever can be made, then lumbar sympathectomy is indicated as a prophylactic measure. This indication is determined by securing the vasomotor index. Should the vasomotor index exceed 1.5, then definite relief may be obtained by section of the lumbar sympathetic trunks. This operation is curative in Raynaud's disease, since that disease is caused by a single process; functional vasomotor disturbance. It is not curative in thrombo-angitis obliterans as there is a dual mechanism, the main process being arterial occlusion in addition to the vasomotor factor. Lumbar sympathectomy does not change the status of the occluded arteries, but it does supply a maximal amount of blood to the extremity through the unoccluded arteries; hence there is a definite basis for this operation. In those cases carefully selected there is some degree of relief of symptoms.

Amputation of the toes is usually unsuccessful, but may be successful in two groups of cases; where there is sudden thrombosis of the vessels of the toes or where there is normal pulsation in the dorsalis pedis artery. Amputation of the fingers has a much wider range of indication and is much more successful. The indications for amputation of the leg are not clearly defined. Intractable pain or gangrene extending above the toes is always clear cut indication for amputation. Perhaps it is well to perform amputation below the knee in the upper third of the leg, if it should be necessary to amputate higher, it can always be done. A movable stump below the knee is desirable.

CASE REPORT

White man, aged 31, married, referred by Dr. William Allan, January 12, 1929.

Chief Complaint: Excruciating pains in the left foot and toes.

Family History: F. (Scotch), 60, 1 and w; M. (English) 55, 1 and w; 1 B. and 1 S. 1 and w; 1 B died in infancy of colitis. On careful elicitation there was no evidence of vascular disease of any type in the family. History negative for cancer, tuberculosis, diabetes or nephritis. A maternal grandmother died at the age of 80 with a senile dementia.

Marital History: Married eight years. Wife has had only two pregnancies, both children living and well.

Past Medical History: He had the usual diseases of childhood—all of which were mild. Light attack of smallpox in 1913, Neisserian infection when about 17. Circumcision when 21. Tonsillectomy six months ago.

Personal Habits: For a number of years his occupation was that of an insurance adjuster which kept him on the road a great deal in all kinds of weather. He smoked moderately—less than a package of cigarettes daily (Camels or Picayunes)—until the past few months, when he has used about three packages of cigarettes daily. To quote: "The pain has been so severe the past two months I had to do something to try to get my mind off of it."

Clinical History: Three years ago he experienced very painful lumps in the calf of the left leg. On advise of an Atlanta physician, he discontinued the use of garters, and the lumps and pains gradually wore away, although at times sudden attacks of cramp-like pains in this calf would come on.

Sixteen months ago, after a long automobile ride, he noticed that the left foot became exceedingly cold—to such an extent that he stopped at a hotel before he had reached his destination. The weather was cold but not below freezing. He bathed the foot in hot water which caused it to ache so severely that he obtained no rest during the night. The next morning the foot was red and swollen and the pain was not abated. Three days subsequently an ulcer appeared on a toe of this foot. After several days the aching pain had decreased somewhat but the foot remained swollen and red, and he noticed that the pain was worse when he would elevate the limb in which position the color became almost white (as he described it). About a week after the appearance of this ulcer on the little toe, he noticed one night a stinging pain in the left little toe extending up the left side of the foot. Although not as severe then as later, attempts at relief by various anodynes were unsuccessful. He noticed that the foot would blanch more on elevation and redden more on hanging down. This ulcer slowly healed after about two months, but the stinging pain persisted,—more moderate in character, however.*

Claudication appeared again about six months ago. Severe cramp-like pains in the left calf would suddenly appear after he had walked about five blocks. Rubbing the part gave some relief. At the same time another ulcer appeared, larger than the first. This healed after about two months. Superficial phlebitis appeared on the left leg and foot anteriorly.

At the time of examination he had four ulcers—one on each toe from the third to the fifth, and a large one involving most of the nail region of the great toe. The under surfaces of these toes had become dark in color. Rest pains were so severe that he had not had a full night's sleep in weeks.

His disability was approximately fifty per cent. He estimated that the disease had cost him more than two thousand dollars in the past year or eighteen months, in money expended and diminished earnings. He had made only a moderate salary and forced himself to work when he knew that he should have been in bed.

*Subsequently to the death of the patient his employer told me that during the past winter he has noticed him many times complaining of coldness and pain in his fingers on coming to the office, and that he would sit by the radiator warming and rubbing his hands for varying lengths of time.

His trouble has been diagnosed arthritis, diabetes, chilblains, eczema and neuritis; and one man thought his trouble was due to improper force on the feet and advised the use of felt pads placed in the shoe. Dr. Allan made a diagnosis of Buerger's disease.

Examination revealed good development, some loss of weight, an anxious expression and frequent twitchings of the facial muscle signifying pain. His height was 5-10½, weight about 160, pulse 90, temperature 98.6 and blood pressure 130/82 at 9:00 a. m. Throat was slightly reddened, but the tonsils were out cleanly. Teeth showed dentistry graded 2 plus (basis 4). The arteries of the neck and arms were normal to palpation. Chest and abdomen were carefully examined with negative findings. External genitalia were normal. The prostate was especially noted in view of a history of a Neisserian infection years before. It was of normal consistency and tenderness and was not enlarged. The reflexes seemed normal.

The distal half of the left foot was markedly reddened and swollen. It became blanched on elevation (180°) and very red and bluish when in dependent position (0°). The great toe was about three-fourth gangrenous with an ulcer on the inner aspect of the nail area. Ulcers were present on the third, fourth and fifth toes. The fourth toe was partially gangrenous and was almost auto-amputated. On the inner side of the left foot several nodosities were felt. On the dorsum of this foot there was a superficial phlebitis graded 3 (basis 4) which seemed to follow the veins accompanying the dorsalis pedis artery. For one third the distance up the leg there was an area of old phlebitis following the course of the anterior tibial artery. Trophic changes were marked in all toe nails of the left foot. The angle of circulatory efficiency was approximately 110°. I could not determine the angle of arterial obliteration, but it was in the neighborhood of 45°.

Pulsation of the arteries. In the right leg they were apparently normal with the exception of possible decrease in the right dorsalis pedis. In the left leg there was obvious decrease in the femoral and popliteal arteries. I could get no pulsations at all in the left dorsalis pedis.

Elevation of the left leg caused exquisite pain in the foot and toes, and the patient would beg to put the foot down.

Laboratory: Urine was normal except for a faint trace of albumin and very few pus cells. The blood showed 100 per cent hemoglobin, 5,600,000 red cells and 14,700 white cells, 77 per cent of which were neutrophiles, 20 per cent lymphocytes and 3 per cent eosinophiles. The Wassermann was negative. Blood sugar was 91 mgm., urea N. 12.5 mgm. and creatinine 1.4 mgm. per 100 c.c. X-ray of both hands were negative. X-ray of the feet showed possible atrophy of the phalanges of the right foot and certain atrophy of the phalanges of the left foot.

Treatment: The patient was put to bed, soft diet and forced fluids. Cigarettes were restricted to three daily. The usual hygienic measures were followed.

(1) Radiant heat was furnished from electric light bulbs an hour or two several times daily. These bulbs were arranged inside an arch covered with blanket into which the foot and leg were placed.

(2) Circulatory exercises twice daily for fifteen minutes were given. These consisted in elevating the leg to an angle of 180° for a couple of minutes, lowering it to 0° for the same time, then placing it on the bed for an equal length of time.

(3) Contrast baths were given twice daily. These are given by emersing the foot and leg alternately in hot (110°) and cold (45°) water for a minute each. Fifteen minutes is sufficient time for each bath.

(4) Systematic fever was induced by the intravenous administration of a nonspecific protein—typhoid vaccine. This was done every four days. A chill and fever followed each injection which subsided in twenty-fours hours—or less. Determinations of the vasomotor index were made as follows: The temperature of the afflicted extremity

was taken at several points using an ordinary clinical thermometer and folding the skin up around it. At the same time the temperature by mouth was noted. Using the formula above the vasomotor index was found to be:—

Mouth temperature (normal) 98.6°. After induction of systemic fever 100.9°.
Skin temperature (normal) 94.0°. After induction of systemic fever 97.0°.
Increase in mouth temperature=2.3°. Increase in skin temperature=3.0°.

Therefore: $\frac{3-2.3}{2.3}=\frac{0.7}{2.3}=0.3$ plus. Definite contraindication to lumbar sympathectomy. The most accurate method of determining the skin temperature is by means of a thermometer couple. This apparatus I do not have. I do not know just how accurate the skin temperatures taken by a clinical thermometer are. The temperatures were taken carefully after five minutes exposures and I believe they are accurate enough to determine if lumbar sympathectomy was indicated. The fact remains that they were constant and that rest pains were not influenced by the use of the vaccine.

(5) Attempts to control the pain with sedatives and narcotics as necessary were made. I have given him as high as 1¼ grains of morphine in a night with absolutely no relief from his rest pains, and he was not an addict. Sodium bromide and chloral hydrate in fairly large doses seemed to give the maximal benefit.

(6) The ulcers were kept dressed with lanolin except when undergoing the contrast baths.

(7) Upward gentle massage was given several times daily.

Under this treatment he showed at no time any signs of improvement. On the other hand he becomes progressively worse. The rest pains were unaffected and unbearable, he would spend night after night with practically no sleep at all. I disliked the idea of administering morphine, as a matter of fact it did him little or no good. The ulcers increased in size and the edema extended above the ankle. The twelfth day after admission to the hospital I advised amputation below the knee. The family did not agree to this, but wanted him to continue the medical regimen a while longer. I think I can understand the attitude of the laity under such circumstances, especially when they have been informed that conservative treatment will suffice in the majority of cases. The clearest indication for amputation is when the pain is intractable or when the gangrene extends above the toes. I haven't the slightest doubt but that amputation should have been performed then. After several more days had passed I urged amputation. Consultation was requested by the family. The consultant and I did not agree on performing amputation, but compromised on performing periarterial sympathectomy. I did not think this operation was indicated but at the same time I did not see that it would do any harm. I was desirous of ascertaining at what level amputation would have to be done subsequently. Accordingly, at the same time periarterial sympathectomy was performed, I moved the patient on the table into the X-ray room where I did an inta-arterial injection of sodium iodide after the method described by Brooks of St. Louis. This operation was performed under nitrous oxide anesthesia the eighteenth day after admission to the hospital. Interestingly enough the femoral artery did not dilate after the adventitia was stripped for a distance of about three centimeters, it contracted to about one half its original size. The femoral artery was approached through Hunter's canal.

For the remainder of the day and most of the next day his condition showed no change, except possibly a little reduction in the severity of his rest pains, which was slight if any. During the afternoon of the nineteenth day—the second postoperative day—the foot became cyanotic. At six p.m. he complained of terrible pains in the foot. His pulse, however, was 90, temperature 98.0, and respiration 22 and his general condition seemed satisfactory. At about eight p. m. he had a hard chill

followed by a rapidly mounting fever. Early in the morning he became irrational and the body, particularly the left foot, cold and clammy. There was a line of demarcation about the ankle. Pulsations in the popliteal artery could be felt.

Amputation was performed under spinal anesthesia the morning of the twentieth hospital day, the third day after the first operation. A Stephen-Smith type of amputation just below the knee was rapidly done. He rallied somewhat until early in the afternoon when the lips became cyanotic, the respirations labored and the pulse thread-like and rapid; the cyanotic appearance spread over the body and, in spite of stimulation, phlebotomy, repeated blood transfusions and intravenous saline injections, he expired in the night.

Lipoidal studies were attempted on the amputated leg, but after injection into the popliteal artery, X-ray exposure showed the solution had escaped into the tissues and that no information of any value could be obtained. On dissection, the dorsalis pedis artery was found to be thrombosed for about a third of the distance up the leg where I lost the anterior tibial artery. The posterior tibial and peroneal arteries were not thrombosed in the upper third of the leg.

The patient died a toxic death. As to the cause of this toxemia I am uncertain. There are several possibilities: (1) It may be that the femoral artery did not dilate after the periarterial sympathectomy as it is supposed to do, thereby diminishing the blood supply to the foot and precipitating a fulminating type of gangrene. (2) Irritation produced by the intra-arterial injection of sodium iodide might have led to a generalized thrombosis. I doubt this, as Brooks has reported a number of cases of all types of vascular disturbances of the extremities in which such an injection was made with apparantly no untoward results. German observers have made similar reports. The turn for the worse appeared too late after the injection. (3) The amputation might have been performed too low. The stump, however, looked no worse than the rest of the body. The tissues through which amputation was performed did not look bad. The posterior tibial artery was open. (4) I am inclined to believe that amputation was delayed too long, and the toxins from the rapid gangrene—always of unusual virulence—overwhelmed the organism.

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DISCUSSION

Dr. A. G. Brenizer, (Charlotte): I think we all wonder, when we hear a presentation of these cases, where they have been that we have not seen them before. This so-called endarteritis or thrombo-angitis obliterans is certainly not recognized. This man I saw myself some months before he was seen by Dr. McKnight, and all he showed then was slight redness of the big toe and pain in the transverse arch. By putting on a woolen sock and a slight pad under the arch it cleared up entirely. That was the last manifestation until seen by Dr. McKnight in this acute attack. The

blood volume to the leg is being cut down, finally ending in stoppage of the artery, as probably took place in his case, by a thrombosis, ending in gangrene. This man had been seen by a number of men, a general surgeon, an orthopedist, an internist, and finally by another general surgeon. To elicit this history one must have Buerger's disease in mind and must ask questions to bring out the history, or one will never discover a slight case of Buerger's disease. An interesting thing is that this man had had some flushing of the toes and had had some pain, etc. That it was not recognized is probably not as excusable as it might be, because we should have thrombo-angitis obliterans in mind when we see a young man with these symptoms and should have Buerger's disease in mind, because these cases end badly if not protected and not treated, as Dr. McKnight has indicated in the medical regime.

I think you may wonder, again, if this is thrombo-angitis obliterans. Why is it not Raynaud's disease? I recall, some years ago, a Polish Jew there in Charlotte who was diagnosed Raynaud's disease. He was amputated and reamputated. During the war he had a recurrence in the other foot, and rather than go through what he had been through before the man shot himself. Raynaud's disease will have temporary remissions, whereas Buerger's disease is progressive. I believe when the man was seen by me if I had been more alert these things would have come out. I would have gotten the symptoms better pointed out by being more alert. But, as you know, when the symptoms are not more glaring we frequently pass over them. It was the same with the internist, the orthopedist, and the other general surgeon. After-thought is always better, but we should be on the lookout, and it is very important to detect these cases early.

As to the outcome of these cases, I do not know what is the outcome. Losing a leg in a young man is to me, and of course to everybody, a terrible thing. Dr. McKnight had injected some sodium iodide. I further suggested that he do an arterial stripping. I think very likely, with this man's failure to temperature response and his excruciating pain, the amputation should have been done before. I think it is most unusual that this man should have developed temperature of 104 and had such a fulminating case in the end and die with toxic symptoms. I do not think the majority of cases would have ended in that way. I think it was an unfortunate turn. Of course, the injection of sodium iodide and the conditions under which it is done might cause thrombosis. I think, again, in doing the periarterial stripping you might get a contraction there or a spasm of the artery closing down the volume of the artery and getting a thrombosis. I do not think those things are either here or there and that a large majority of cases would not have ended so unfortunately. I think the main thing when we do have circulatory disturbances in a young man is to get Raynaud's disease out of our minds and think of Buerger's disease and give the man the benefit of appropriate treatment.

THE INJECTION METHOD OF TREATING HEMORRHOIDS

By Wm. L. Patman, M.D., Greensboro

The treatment of hemorrhoids by the injection method has now become one of the recognized forms of treatment. The method originated in the year 1871 when a Dr. Mitchell of Clinton, Illinois, first began to use it. He kept this method as a secret or sold it to non-medical men or quacks, many of whom traveled about the country advertising their treatment. These irregular practitioners exploited the method, treating all varieties of hemorrhoids, often under unfavorable conditions and with too strong solutions with resulting ulceration, sloughing and other complications. As a consequence, the legitimate and eminent practitioners have tended to ignore the method without seriously investigating it. Only in the last few years did open scientific discussion and investigation begin.

SELECTION OF CASES

More important than any other detail in the injection method is the proper selection of cases. The present status of medical opinion on the subject is that only simple, uncomplicated internal hemorrhoids are suitable for the injection method. External hemorrhoids should never be injected and neither should internal hemorrhoids complicated by fissure, ulceration, thrombosis, inflammation, strangulation or gangrene. It has been found that only about fifty per cent of the cases of internal hemorrhoids are uncomplicated and suitable for the injection method. The best results are obtained in those uncomplicated cases in which bleeding is the chief symptom.

SOLUTIONS AND PATHOLOGIC CHANGES PRODUCED

Various chemical agents have been tried in the injection treatment of hemorrhoids. Carbolic acid in some form or combination has proved the most popular and satisfactory to most men using this injection method.

Terrell, of Richmond, has used a five per cent aqueous solution of quinine and urea hydrochloride in over three thousand cases since 1913 with uniformly good results.

The object of the method is to set up a mild productive inflammation within the pile tumor and the tissue surrounding it. Duke and Anderson describe the pathologic changes provoked by carbolic acid as an initial aseptic inflammation characterized by dilatation of the vessels, emigration of leukocytes and transudation of lymph. About the third day following injection the microscopic changes represent the effort of the tissue to repair, i.e., proliferation of fibroblasts has begun. Finally intravascular clotting and subsequent fibrosis takes places, the connective tissue contracts and in its contraction causes obliteration of the dilated veins and a shrinkage or disappearance of the piles.

Clinical experience has proven that ten per cent solutions of carbolic acid will safely accomplish the desired obliteration. Personally, I use a

combination of cresylic acid, glycerine and distilled water, which Montague recommends. Cresylic acid is essentially the same chemically as carbolic acid, but is supposed to be much less toxic and irritating.

TECHNIC

If the patient is at all constipated I advise them to take some form of mineral oil on two successive nights before the treatments are begun. The rectum should be empty, but I seldom advise any sort of enema. The patient is put in the Sims or left lateral position, the hips at the edge of the table and the right leg flexed at the knee and hip. A good light is essential. A speculum, which is well lubricated, is introduced and the hemorrhoids brought into view. Of all the speculums I've tried I like the Brinkerhoff best. When its slide is withdrawn, an excellent longitudinal view is obtained, the hemorrhoid to be injected prolapses in the slot. The mucosa of the hemorrhoidal tumor is wiped dry with a cotton swab and the point selected for puncture is touched with tincture of iodine. The needle is then plunged into the center of the hemorrhoid to a depth of one to one and a half centimeters, depending on the size of the hemorrhoid. The solution is slowly injected, the needle being withdrawn gradually and just before its final withdrawal one or two drops are injected and the needle held in situ for a minute. This last procedure tends to seal the wound and allows very little escape of the solution or blood. When there is any bleeding or escape of solution through the needle wound, gentle pressure with a small pledget of cotton is maintained till it ceases. Vaseline, K. Y. jelly, or boric ointment is then smeared over the surface of the hemorrhoid and the speculum removed.

The amount injected varies with the size of the hemorrhoid and also with the solution used. When using five per cent quinine urea hydrochloride more is used than when the ten per cent carbolic combinations are used. Just enough solution is injected to produce moderate distension. As soon as the slightest blanching appears the injection should be stopped. It is much better to inject too little than to inject too much, and I usually stop before any blanching can be seen.

I use a one c.c. all-metal Cook syringe and a 23-gauge goose-neck needle. This type of syringe is non-breakable and is adapted for the use of the convenient carpule. These carpule solutions are all standardized, sterile and very economical—no anesthetic is needed as no pain will be felt unless the injection is made too near the mucocutaneous margin. A transient feeling of fullness in the rectum or a dull ache is all the patient usually complains of. This feeling disappears in one to six hours. No after care is necessary except liquid petrolatum is recommended morning and evening if bowels do not move daily.

The following case report is presented in order to show the value of this method of treatment in certain complicated conditions where open operation is contraindicated.

Mr. J. T. C., white man, age 43, was first seen October 10, 1928. His chief complaint was bleeding hemorrhoids for three years' duration. For the past three

months the bleeding has become more profuse until at the present time he estimates that he passes a teacupful of blood with every bowel movement.

The most interesting feature of his history is the fact that he is a bleeder. The first bleeding occurred into one of his hips before he could walk. He remembers bleeding profusely from slight cuts during childhood and almost bled to death following the extraction of his milk teeth. Following the extraction of two of his permanent teeth he bled for ten days. As a youngster he bled frequently into his ankle, knees, and often into his hips. Lately his wristts and elbows have been involved. The slightest bruise causes bleeding into his muscles.

One brother had the same condition and died from hemorrhage into his bowel, but no further family history of hemophilia could be obtained.

Physical examination was essentially negative except for hypertrophic changes and limitation of motion of both elbows and both knees.

Rectal inspection revealed many external connective tissue hemorrhoids or skin tabs. When patient bears down numerous berry-like masses protrude through the anal orifice. Proctoscopic and sigmoidoscopic examinations were negative.

Laboratory Findings: Blood Wassermann negative. HB 50%, RBC 3,100,000, WBC 7,000, Polys 68, Lymphocytes 32, blood platelets, 210,000, coagulation time 37 minutes.

Treatment: The first injection was made October 10, .5 cc of a ten per cent cresylic acid solution was injected into two of the most vascular hemorrhoid masses. There was considerable bleeding when the needle was withdrawn, but this was controlled by slight pressure with a pledget of cotton. The patient complained of slight burning for about five minutes after the injection. There was also a sense of fullness for three hours. Patient was able to ride to his home thirty mile away. Injections were repeated on October 15th and October 22nd. Patient reported that all bleeding had ceased following the third injection. The injections were continued weekly for eight treatments when the patient was injured in an automobile accident and he was unable to return to Greensboro for two months. He reported back to my office March 25 and stated that he occassionallly saw one or two drops of blood when his bowels moved. Two injections were sufficient to stop all signs of bleeding.

Treatment of this case was undertaken with a certain amount of apprehension; the precaution used was a small needle, No. 24 in place of No. 23 usually used in this treatment; not more than .5 cc of the solution was used in each hemorrhoidal mass, preferring to give a great number of treatments rather than take any chance of sloughing. These cases are desperate—something must be done. In my opinion, this method of treatment offers the best and safest chance to control the hemorrhage.

DISCUSSION

Dr. L. D. McPhail, (Charlotte): The treatment of hemorrhoids by the injection method is one that has made a very, very favorable impression with me, and I am mighty glad to see Dr. Patman bring it out in this society. I should like to run over very briefly my simple method of handling these cases. That is, I first make a very careful diagnosis, being sure that I have uncomplicated internal hemorrhoids. That being established, I feel absolutely sure then that I can go ahead and make a cure in a reasonable length of time by the injection of any of the different remedies of which Dr. Patman spoke. I personally prefer either an eight per cent carbolic in olive oil or five per cent muriate of quinine. After that I go into a business session with my patient. I expect to relieve that patient of the symptoms in one or two visits, but of course he will not be cured, and he is a very unusual person if he will continue to come if he feels perfectly well. So I tell him we will have a business understanding,

that I am going to charge him so much for the treatment, not so much per treatment, and if I take the case then he is perfectly free to come to me as often as he thinks necessary until he is cured. Of course, how many treatments he needs depends on his condition. He may get several treatments and if I find he will not yield to the injection treatment—which is very rare, but does occur, then the patient is not any worse off for surgery. The injection treatment does not make him any the worse off for surgical intervention, should he need it. I think it is the best form of treatment for people who have to work for a living; it does not cause any loss of time other than the time it takes to come to the office. It does not occasion any pain ordinarily. It is remarkable how quickly you can control the symptoms with these remedies. Hemorrhage or protruding frequently are never seen after the first or second visit, and that convinces your patient, and usually he will stay with you if you do not hold him too long.

Dr. Patman, closing the discussion: Just a few words about recurrences. I have not had an opportunity to follow up my cases long enough. From the experience of other men, recurrences usually come in anywhere from three to five years. Martin gave statistics on 2,400 cases with about fifty per cent recurrence. I think after open operation you get anywhere from five to ten per cent. After observing these people with so little discomfort I am very enthusiastic about it; to put it more strongly, I will say if I had uncomplicated hemorrhoids I would be a candidate for injection.

ABNORMAL DUCTS OF THE URETHRA

By Robert W. McKay, M.D., Charlotte

Every practitioner knows that the presence of the multiple glandular system in the lower urinary tract constitutes the greatest difficulty in the eradication of urethral infection. It has long been established that the glands of Littre, Cowpers glands and ducts, the prostate and seminal vesical, may harbor the infecting organism long after the lumen of the urethra itself has been thoroughly sterilized. Frequently, however, there occur, opening in or to the side of the urethra, congenitally abnormal glands whose presence frequently goes unrecognized. These glands frequently remain infected and serve as foci which re-infect the urethra time and time again.

By most writers on the subject, these structures are known as para-urethral ducts. The word "para" by common consent, of writers on the subject, being applied only to the congenital, anomalous ducts of the urethra.

The origin of these structures was not explained until the embryology of the genito-urinary tract was thoroughly worked out. They represent disconnected tubules that were split off from the original epithelial tube constituting the uro-genital sinus.

These ducts may open at any point along the pendulous urethra. They may occur on the dorsum of the penis and may be so long as to constitute false, double urethra. However, the commonest site is on either side of the lips of the meatus of the penis. One end of the duct communicates with the urethra and the other end of the duct ends blindly. It is quite evident that the depth of the duct may harbor the gonococci and periodically they infect the lumen of the urethra.

Many and various means have been devised for sterilizing the depth of these ducts. They have been injected with silver nitrate and other sterilizing chemicals. Some have advised fulgurating their depth with a small wire. However, the lumen of the duct is so small that, although fluids can be forced into them, a wire cannot be introduced.

We think the treatment of these infected abnormal ducts of the urethra depends upon whether or not the infection is acute or chronic. In the acute stages they develop the typical peri-urethral abscess. Most urologists have great fear of opening these ducts from the outside, fearing, of course a penile fistula. I have, routinely, opened them through the skin, in their acute stages, and washed through and through into the urethra with a blunt syringe. The treatment of chronic infected paraurethral ducts consists of their being injected with some strong chemical such as 20 per cent silver nitrate or, as I have recently carried out, their complete excision with a closure of the defect in the urethra. I carried out this treatment in five cases in which the duct was excised down to the lumen of the urethra and in none of these cases have we had penile fistulae.

CONCLUSIONS

1. Anomalous ducts of the urethra occur more commonly than are usually recognized.
2. The reddened duct opening at the urethral meatus, combined with its firmness, may make one suspicious of chancre.
3. Acute infections of such ducts constituting peri-urethral abscesses, should be drained through the skin.
4. Chronically infected ducts should be sterilized by injections of strong silver nitrate solutions, and if this fails, they should be excised down to their opening in the urethra.
5. We have excised five such ducts down to their openings in the urethra and have had no urinary fistulae.

DISCUSSION

Dr. Fred M. Patterson, (Greensboro): This condition seems simple to diagnose, but in protracted cases it is often diagnosed in error as chancre or chancroid. I think they have no clinical significance unless they are infected.

Dr. Albert W. James, of Monroe, was nominated for recommendation to the President of the Society for appointment as chairman of the section for next meeting. The section adjourned.

SECTION ON EYE, EAR, NOSE AND THROAT

The Section on Eye, Ear, Nose, and Throat met in the Florentine Room of the King Cotton Hotel on Tuesday, April 16, 1929, and was called to order by the Chairman, Dr. M. R. Gibson, Raleigh, at 2:25 p. m.

Dr. V. M. Hicks, Raleigh, Secretary.

TONSIL AND FOCAL INFECTION

By H. A. Newell, M.D., Henderson

It is a well established fact that there is a relation between focal infections and general systemic disorders. A chronic infection may be present for years at the root of a tooth, in one of the nasal accessory sinuses, in the crypts of the tonsils or adenoids, in the epididymus, the endometrium, the appendix or the gall bladder without the production of local symptoms that will attract the attention of either the patient or the physician.

The upper air passages are frequently the site of focal infection and are intimately related to each other. In order to recognize and treat the infections of the tonsils, pharnyx and naso-pharnyx, a clear understanding of the anatomy and physiology of this region is necessary. The naso-pharnyx is important clinically because of its anatomical situation. It is often responsible for infection in the nasal air passages, the eustachian tubes, the tonsils, larynx, trachea, retropharyngeal and cervical lymph glands. The nasopharynx lies between the free edge of the soft palate and the upper border of the epiglottis and contains the tonsils and a variable amount of lymphoid tissue on the lateral and posterior walls of the pharynx. The structure of the tonsil and its anatomical situation with reference to the nasal accessory sinuses, nasal passages, naso-pharynx and teeth are important factors in the production of chronic tonsilitis. The tonsil is inclosed by a definite fibrous capsule that separates it from the superior constrictor muscle. A tonsillectomy is incomplete anatomically and clinically if any part of the tonsil or its capsule is left unremoved. The lymphatic tissue that remains after an incomplete tonsillectomy hypertrophies and scar tissue forms over the cut surface, which tends to produce pockets and partially occlude the remains of crypts. The final result of an incomplete tonsillectomy is sometimes worse than the original condition.

The crypts of the tonsils are branching channels that end blindly at the capsule. These channels are lined with squamous epithelium and there is no layer of subepithelial connective tissue. Normally the crypts contain lymphoid cells, desquamated epithelium, particles of food and saliva. The

blood supply of the tonsils is from three main sources: (a) The tonsillar ramus of the external maxillary (from the external carotid). (b) A large branch of the lingual enters near the inferior pole. (c) The upper part of the tonsil is supplied by one of the pharyngeal rami of the descending pharyngeal artery, and by the descending palatine artery—a branch of the internal maxillary. George B. Wood has worked out the lymphatic drainage of the tonsils. He describes the tonsil gland as one of the group of deep cervical glands, lying just beneath the anterior border of the sterno-mastoid muscle, where it is crossed by the posterior belly of the digastric muscle. It lies external to and slightly anterior to the internal jugular vein, is embedded in loose areolar tissue and when enlarged is dislocated outward and forward, presenting at the angle of the mandible. In the arrangement of the lymphatic glands of the neck, we find: (1) A group of collecting nodes that form a collar about the upper portion of the neck, consisting of the occipital, mastoid, parotid group, submaxillary group, submental glands and the retropharyngeal. (2) Two descending chains shaped like an inverted V, the apex of which lies just below the tip of the mastoid bone and under the sterno-mastoid muscle. One chain extends down the neck, under the anterior border of the sterno-mastoid muscle. The other group follows the posterior border of the sterno-mastoid and the anterior border of the trapezius.

The function of the tonsils, adenoids and other lymphatic tissue in the throat is assumed to be the part it plays in the protection of the lower air passages against infection. The other protective agencies being the mucus secreted by the mucous membrane of the nose, pharynx and trachea; the ciliated epithelium of the nose and trachea; Waldeyers ring of lymphoid tissue in the throat and the cervical lymphatic glands. The tonsil plays a particularly important role in picking up organisms introduced into the mouth, especially in childhood.

When a patient comes complaining of repeated attacks of tonsilitis, a careful examination should be made of the nasal passages, accessory sinuses, gums and teeth. One need not expect to give relief by tonsillectomy alone if there are other points of infection. A pyorrhea may exist without giving rise to subjective symptoms. Particular attention should be paid to carious teeth. All crowned teeth should be watched with suspicion. A low grade of chronic infection under a gold crown that has loosened may cause repeated acute attacks of tonsilitis. In that case attention to the tooth is as important as any amount of infection in the tonsils. The three "T's," teeth, tonsils and toxemias, must be constantly in our thoughts. White plugs of cheesy material may or may not be of importance. They are important only if they contain infectious material. The act of swallowing forces saliva and food and sometimes organisms, if they are present in the mouth, into the crypts. Young children are inclined to put all sorts of things into their mouths, including impure water, milk and other foods, and in that way many germs are carried in. This is

probably one etiological factor in both the pyogenic and tubercular infections of the tonsils.

Anything that obstructs the orifices of the crypts, produces stasis and increased susceptibility of the tonsils to infection. Thus scar tissue on the surface of the tonsil makes conditions more favorable for the development of chronic tonsilitis. For that reason, an imperfectly performed operation sometimes leaves the patient's condition worse rather than better.

There is a difference in the blood supply of a normal tonsil and a chronically infected one. In the case of an infected tonsil there is an inflammatory process in the tissues around it which results in adhesions and increased blood supply. This consideration is of great importance because of the greater tendency to hemorrhage. It is thought by many operators that if bleeding is carefully controlled there will be no pneumonia or lung abscess following tonsillectomy.

The lymphatic channels from the posterior part of the nose, the naso-pharynx, the tonsils and that part of the larynx above the vocal cords, all empty into the upper third of the cabin of deep cervical glands. One of the strongest indications of chronic tonsilitis is chronic enlargement of the cervical glands at the angle of the jaw and the persistence of that enlargement after operation would indicate that further examination should be made for a focus of infection in a bit of tonsil or adenoid which remains. As a rule, tonsillectomy is not indicated in infectious arthritis, glomerulo-nephritis, anemia, etc., unless the glands at the angle of the jaw are palpably enlarged, except in very fleshy individuals, in whom the glands may not be palpably enlarged.

One thing to remember in operating is, that an aneurysm of the internal carotid artery may be present and if cut the result is usually serious. It usually shows an enlargement unilateral, behind the posterior pillar. On palpation and inspection, a pulsation can be seen and on auscultation at the angle of the jaw a bruit can be heard. Personally, I have not found a case of that kind.

Indications for tonsillectomy: Local disorders in the upper air passages, which cause difficulty in swallowing, articultation or breathing. Frequent tonsilitis or quinsy, chronic laryngitis or bronchitis, chronic diphtheria carriers, new growths. Local manifestations in the cervical glands, draining the tonsils, tuberculous cervical adenitis and general systemic disorders secondary to a focus of infection in the tonsil.

Note: In chorea, acute rheumatic fever and heart lesions, it is often advisable to remove the tonsils and adenoids in order to prevent further cardiac lesions that may result from an acute attack of tonsilitis, but the operation should never be done during the acute stage of the disease. In chronic nephritis and arteriosclerosis accompanied by repeated attacks of tonsilitis an operation may be of benefit, by preventing further acute attacks.

Contraindications for tonsillectomy: Tonsillectomy should never be undertaken during the acute stage, diabetes—in many cases, acute chorea,

acute rheumatic fever or endocarditis. In incipient or advanced tuberculosis a general anesthetic should not be given. Hemophilia.

General considerations: Much literature has appeared about the use of X-ray and radium in treating tonsils. It seems to be the accepted opinion that it is necessary to gather further data on cases under observation before we can say how the results are. The size of the tonsil does not indicate whether or not it is a focus of infection. This is especially true in children. Redness of one tonsil or parts of one tonsil or a tonsil and pillar leads one to suspect them of being a possible source of systemic disease. This may be associated with demonstrable pus in a crypt of the tonsil or in a pocket between pillar and tonsil, usually at the upper pole. If the pillar is drawn away from the tonsil and pressure made on the lower portion of it, a few drops of pus may come from its hidden recess. This pus usually contains the streptococcus if thin, or staphylococcus if yellow and creamy. The white or yellowish thick plugs of cheesy consistency may not be of pathological significance, though they do favor invasion by pathogenic bacteria and account for many offensive breaths, which are often charged to stomach, liver or constipation. A small tonsil with smooth exterior and without a history of sore throat, may contain an abscess within. A submerged tonsil, covered by adherent pillars is more likely to be the seat of a focus of infection than a large isolated tonsil. Another bad type of tonsil is found in a throat, which is red and rough and in which furrows in the tonsil or pharynx are filled by a thick, tenacious, purulent mucous. Pieces of tonsils left after operation and tonsils which have had abscesses (quinsy) often hold chronic abscesses beneath the operative or inflammatory scars.

SOME REMARKS ON DEAFNESS OF FOCAL INFECTION ORIGIN

By George W. Mackenzie, M.D., Philadelphia

The writer has chosen this subject for the following reasons:

1. That it is one that he has studied more thoroughly than any other and at the same time one that has been largely overlooked by the average otologist.

2. That up to the present time he has studied the subject more seriously than anyone else whom he can find, judging from the literature.

3. That the differential diagnosis of conductive and perceptive deafness requires a painstaking examination of the hearing function with the tuning forks, for which the writer has been a most persistent advocate and not with the audiometer.

4. That the diagnosis of neurolabyrinthitis, responsible for the deafness ofttimes associated with vertigo, calls for an examination of the nonacoustic labyrinth more compresensive than the average man is wont to make.

The collateral study of every case of deafness calls for certain laboratory examinations made by specialists who are exceptionally expert in their respective fields. These examinations include complete blood count, with especial attention paid to the differential count; Wassermann, blood sugar, etc.; complete urinalysis including the estimation of the amount of indican; gastro-intestinal examination with opaque meal; looking carefully for the presence of diverticula in the large bowel; roentgenological study of the nasal accessory sinuses and of the alveolar processes both before and after the extraction of teeth, not forgetting the frequent existence of residual pathology.

Appreciating the fact that a chain is no stronger than its weakest link, the writer, in order to obtain the best results insists upon what he believes to be the two most essential considerations next in importance to the otological diagnosis. These are the selection of those laboratory experts in whom he has implicit confidence and the absolute control of the treatment, including the choosing of the exodontist when one is needed, the method of collecting the material from the socket for culture and the cultural methods to be employed.

Only after the careful study of a large amount of material is it possible from clinical investigations to make a differential diagnosis of the etiological factors—focal infection on the one hand and syphilis or some other disease on the other. By the clinical manifestations of focal infection in this case is meant those symptoms and signs which are characteristic of *unilateral perceptiva* deafness.

Focal infection, contrary to general belief, is one of the more common causes of progressive deafness.

The diagnosis of unilateral perceptive deafness characteristic of focal infection is comparatively easy if one knows how to make an examination with precision and then interpret the findings.

The improvement in the local symptoms referable to the hearing organ which follows the elimination of the primary focus is generally accompanied by improvement in other directions. The most striking illustration of such improvement is in the vertigo from which some of these patients have suffered, but which they neglected to mention in the original history; chronic arthritis is another common complaint, also backache not infrequently attributed to some uterine displacement in women. There is apparently no end to the list of complaints which have been known to improve as the result of the removal of a focus of infection for deafness.

It is not altogether inconceivable that a patient suffering from deafness and vertigo because of an involvement of the sensory ganglia of the cochlear and vestibular branches of the eighth nerve secondary to a primary focus in the tooth socket, may not be suffering from a similar character of lesion in the sensory ganglion of the vagus in a more latent form and the elimination of the one common focus results in a cure, so far as a cure in possible, of both lesions.

In some cases though the patient does not mention having suffered from vertigo along with deafness. A careful examination of the so-called vestibular functions reveals an imbalance on the two sides by the turning and caloric tests because of a hypofunction on the affected side. Again, in those cases where the patient's chief complaint, perhaps his only complaint, has been vertigo, a searching examination will reveal at the same time some loss of the hearing function of the *perceptive* form. Because a patient comes to the physician complaining of a definite set of symptoms referable to one part of the body is no proof of the non-existence of a disease in some other part.

As to the frequency of focal infection ailments, by which is meant the secondary manifestations of a chronic focus of infection, they are indeed very common. According to the writer's estimate focal infections are responsible for a majority of the chronic ailments.

Focal infection is responsible for at least eight times the number of cases of so-called nerve deafness as syphilis, and is more often responsible than all other causes put together. This claim would appear to be indeed extravagant to any one who has gone through a deaf mute institution where the more common causes of deafness appear to be scarlet fever, measles, mumps, meningitis, hereditary syphilis, and traumatism. To offset this we have to consider the fact that many of the institutional cases of deafness are due to involvement of the conductive apparatus; furthermore, the deafness found in the deaf mute institution is amongst children who have not yet had time to develop the chronic focal infections. In compiling figures pertaining to the causes of deafness we must reckon the adults along with the children.

Children very rarely suffer from the effects of *chronic* focal infection, they are more prone to develop the secondary manifestations of the *acute* form of focal infection in which the actual bacteria find their way into the blood stream and thence distributed throughout all parts of the body spending the greatest force on that particular organ for which it has an elective affinity. In contrast to this we have in the *chronic* focal infections in which the bacteria are less virulent than those found in the *acute* infections. In the chronic focus the writer inclines strongly to the belief that the toxins of the bacteria rather than the bacteria themselves, find their way first into the lymph and then into the blood stream by which channel it is dispersed throughout all parts of the body, producing general toxic symptoms, together with a mild grade of chronic inflammation in that particular tissue or organ upon which the poison exerts a specific deleterious action.

The greatest danger of chronic focal infection is not so much from the *extent* of the primary involvement as from its *confinement*. In other words, a tiny focus, smaller than a pin head situated about the apex of a tooth will do more harm than a large superficial area of infection exposed to the atmospheric oxygen. This brings up the factor of "oxygen tension"

which the writer has come to accept as one of the most important phases of the subject of focal infection brought to our attention by Rosenow and Billings.

So far as the specific action of bacterial toxins is concerned it is no more inconceivable than the specific action of other poisons taken from the mineral, vegetable or animal kingdom: For example, arsenic on the nervous system; methyl alcohol on the optic nerve; mercury on the kidneys; iron salts on the blood; potassium salts on connective tissue, etc.

Let us next consider the manner in which a diagnosis is made in a classical case of focal infection deafness:

The patient, Mr. A. B. C., calls with a history of having impairment of hearing in the right ear lasting over a period of several months. The loss of hearing has been increasing, especially since an attack of "flu" six weeks ago. He complains also of some ringing noises in the same ear. He denies ever having had a running ear. The hearing was perfect so far as the patient is aware prior to six months ago. He claims to be in good health otherwise and never had any dizziness; but, upon being questioned closely he admits having felt a slight unsteadiness at times.

The functional hearing tests reveal a diminution of hearing for conversational and whispered voice on the right side with normal hearing on the left side. The Weber is lateralized to the left side, showing that the bone conduction is impaired on the right side. Air conduction for the middle, low and high pitch tuning forks is impaired on the right side. The Rinne tends to be positive in that the air conduction, though poorer than normal, is better than the bone conduction. In other words, there has been a lessening of bone conduction along with the decrease in the air conduction which is contrary to that found in conductive deafness in which the bone conduction is improved. From every angle, therefore, the deafness in the case we are studying is due to an involvement of the perceptive apparatus (inner ear, nerve, or both).

The study of the vestibular apparatus may or may not reveal the presence of a spontaneous mixed rotary-horizontal nystagmus directed toward the left side, which in the presence of perceptive deafness on the right side is more than suggestive of a diminution of labyrinthine tonus on the right side.

The caloric test is positive on both sides, but this is a qualitative test and too gross a method for the detection of the milder grades of hypofunction.

The turning test reveals a diminution of afterturning nystagmus toward both sides, but more especially the right. For instance, after ten turns to the left side with the head erect, there follows a horizontal afterturning nystagmus to the right side lasting for eighteen seconds. After ten turns to the right side with the head erect, there follows a horizontal afterturning nystagmus to the left side lasting for 21 seconds. These are the characteristic afterturning nystagmus findings of a mild grade of hypofunction of the semicircular canal apparatus of the right side.

The galvanic test gives the following findings: With the cathode, six miliamperes to the right ear, there is produced a mild grade of mixed rotary-horizontal nystagmus to the right side. With the anode, two miliamperes to the right ear there is produced a slight increase of the existing nystagmus to the left side. With the cathode, two miliamperes to the left ear, there is produced an increase of the existing nystagmus to the left side. With the anode, six miliamperes to the left ear, the nystagmus is reversed to the right side. These findings confirm those found by the afterturning tests.

The otoscopic findings are negative in that both drumheads are found to be intact, brilliant, normally translucent, no retraction nor bulging, normal mobility with the Seigel instrument and by Politzer inflation.

From the history, the functional hearing tests, the labyrinthine tests in the absence of recognizable changes in the appearance and behavior of the drumheads, there is but one diagnosis possible and that is a right sided unilateral neurolabyrinthitis impairing both the cochlear and labyrinthine functions.

Since *unilateral perceptive deafness,* with or without involvement of the semicircular canal apparatus, has been found in the vast majority of cases to be due to a focal infection located in almost any part of the body, but more often about the teeth, tonsils and sinuses, the next move to make is to send the patient to the clinical laboratory for a Wassermann test, differential blood count and urinalysis including the test for indican. If the blood count comes back 90 per cent hemaglobin; 4,500,000 red cells; 10,500 total white cell count; 56 per cent polys; 36 per cent small lymphs; 8 per cent large mononuclears; 2 per cent eosinophiles and negative Wassermann and no signs of indican in the urine, no albumin, no sugar, normal specific gravity, we feel justified in making the diagnosis of focal infection as the most probable etiological factor responsible for the hearing loss in the right ear. Next, since the teeth are the most common cause of focal infection, the patient is referred to the X-ray expert. If he finds a periapical infection or parts of teeth remaining with areas of resorption about them, we feel that something definite has been found to explain the symptomatology and the blood picture. The patient is then referred to the exodontist with instruction to remove the tooth or teeth that have been found involved and at the same time curette the sockets. The pathologist is asked to send an assistant to make a control culture from material collected from around the neck of the teeth prior to the extraction and also a culture from the material curetted from the abscessed area beyond the socket after the extraction, exercising care to avoid contaminating the specimen taken from the socket. The best way to collect the material is to use a freshly sterilized ear speculum and curette. Furthermore, it is advisable to allow ample time for a cultural growth to show itself in a deep, freshly made brain broth culture medium.

If the report comes back positive growth of streptococcus or staphylococcus or other bacteria from the socket material and if the control

shows a different growth, assuring us of the impossibility of contamination, we feel that the case so far as locating the focus responsible for both the blood picture and perceptive deafness has been pretty well established. If, in addition, the patient reports *prompt* improvement in the hearing function and the functional tests confirm his report, we have added proof of the etiological relationship of the infection about the tooth socket to the hearing impairment. If, with the clinical improvement the blood findings return to normal there appears to be nothing remaining to further prove our case.

The writer appreciates the fact that he has not covered the subject thoroughly. To do so would require many times the time ordinarily allowed for the presentation of a single paper. For that reason he is trusting to be able to cover it all on a number of occasions as opportunity is afforded.

DISCUSSION

Dr. V. K. Hart, (Charlotte): I think this is a very timely paper. I have read a good many of Dr. Mackenzie's recent papers and never fail to get something out of a paper by him. I think we can sincerely say that no other man in this country has done more in behalf of scientific ear work than Dr. Mackenzie. It would therefore be impertinent for me to discuss his paper, but I do think it would be within the bounds of propriety for me to ask him a question.

It is true that these patients whom we see with focal deafness present predominating unilateral symptoms. Often, however, when you carefully examine these patients with functional tests (that is, with the tuning fork, audiometer, turning tests, etc.) you find the patient has definite signs of involvement on the other side as well, although his subjective symptoms are relegated to one side. That is entirely compatible, I think, with the toxemia. The question that troubles me, however, is this type of patient about which I want to ask Dr. Mackenzie. We see a patient with predominating symptoms unilaterally, but when we examine the patient we find a normal ear with pathology entirely unilateral. Often the onset is with an intense Meniere's complex; they have intense dizziness, lie on the affected side, and are miserable when you examine them. You find when you examine them that they have the classical symptoms of inner-ear deafness, which brings me point-blank to the question which I very respectfully submit to such an authority. Why, with findings entirely unilateral, is it wrong to theorize and say that possibly about a long persistent clinically abscessed ear you have an area of thrombophlebitis and embolus to the middle ear rather than a toxemia? I hope I have made my point clear.

Dr. E. B. Clements, (Salisbury): About four years ago I attended a meeting in Charlotte. Dr. Alfred Stengel was there discussing deafness and specialists' treating deafness. He said, "I can take any medical student and teach him in five minutes as much as he practices in treating deaf-

ness." I believe it is true and that the deaf patient is neglected more than any other patient whom we examine. Today I took the liberty of bringing a man up to have Dr. Mackenzie look him over. After the meeting I should like to have Dr. Mackenzie go over this man before the section and show us just how he examines these cases with his tuning fork. He has hurriedly gone over this man, and I think it would be wonderful for us to see just the care that he takes. After the last paper, if the members of the section desire, I will bring in this man and have Dr. Mackenzie go over him. It will take just about fifteen minutes.

Dr. Mackenzie, closing the discussion: Dr. Hart, I appreciate very much your kind remarks. To take up this particular question, unless we know precisely or have a precise way of knowing something about the given condition or the given symptoms, of course anyone has the right to guess at an answer or to speculate, at least. There are cases of focal-infection deafness which are bilateral. About the time I first became interested in the subject of focal-infection deafness Dr. Shammo, a very capable man, reported four cases of focal-infection deafness from a primary focus in the tonsil. Those cases were all bi-lateral. I point out the fact that unilateral perceptive deafness is a quite characteristic finding of focal infection. I might also qualify that by saying that about four-fifths of the cases of unilateral perceptive deafness are of focal-infection origin. We can also have cases of gumma producing unilateral perceptive deafness, but they are rather rare compared to focal infection.

As to there being an embolus in the inner ear, I am not inclined to believe that is true, for the reason that in my paper and other papers I have written on the subject I have mentioned the fact that the improvement is exceedingly rapid. I have had patients come to me with marked deafness and tinnitus who have a tooth removed, for instance, or a focus of infection somewhere else removed and who will come the next day and ask if it is possible for them to have experienced improvement so soon; a patient may say he can hear his watch tick, while before the operation he could not hear it at all. In spite of Rosenow, I cannot believe that anyone could have a micro-organism in the inner ear causing an infection in the inner ear, migrating from some primary focus, responsible for that deafness, or why should the removal of the primary focus cause such rapid improvement? There is only one possible explanation, and that is toxemia. There need be no question as to speculating and saying it is due either to organisms or toxins of organisms. My theory is that it is due to the toxins; otherwise we could not get these exceedingly rapid results. In fact, I have seen and you gentlemen know of secondary manifestations in other parts of the body where the results were visible in twenty minutes after removal of the primary focus. We do know that they sometimes clear up exceedingly rapidly. Most of you are familiar with the work of ....., showing that herpes zoster is due to the secondary manifestations or is the secondary manifestation of a primary focus somewhere in the body, with the streptococcus as the organism, and if you take from the

tooth socket a very bad tooth you can reproduce in an animal, in the vast majority of cases, herpes zoster. Rosenow has done some of this work, and Price has checked it up since very thoroughly. We know that either the bacteria themselves or the toxins have a selective action on the spinal ganglion, which is the region responsible for herpes zoster, as has been proven by the Vienna school (Marberg of Vienna), that in the case of herpes zoster there is a lesion, a round-cell infiltration of the spinal ganglion, and by no method of staining for bacteria are we ever able to recover micro-organisms. So we do not believe that it is due to a toxin, a bacterial toxin. Next, I feel from the accumulated data I have that eventually it will be proved by histological studies that the lesion from focal-infection deafness will be found to be in the spinal ganglion and in the case of the Meniere's complex we speak of there is also involvement of the Scarpa's ganglion.

I hope I have answered your question.

OBSCURE SOURCES OF FOCAL INFECTION IN THE POSTERIOR NASAL SINUSES

By M. E. Bizzell, M.D., Goldsboro

In presenting this paper, I shall, as my title indicates, limit my remarks to the posterior nasal sinuses, namely, the posterior ethmoids and sphenoids. I am omitting the maxillary, frontal and anterior ethmoidal sinuses because every oto-laryngologist and practically every practitioner is familiar with them as a seat of foci of infection, and because their diagnosis is usually made readily. This, however, is not always true with the posterior nasal sinuses, especially the sphenoids.

It is not the acute and chronic suppurative infections of these sinuses that usually offer us the most difficulty in diagnosis, for in these types, pus or muco-pus can usually be demonstrated dripping back into the naso-pharynx or down from the superior meatus over the middle turbinate. Large crust formations are also usually seen about the turbinates and in the epi-pharynx. The mucosa is also usually edematous and congested, and the patient generally comes in complaining of one or more of his nasal disturbances along with his malaise and local symptoms, and it is often apparent to even him that he has trouble in his nose and that it may be the cause of his impaired vision, headaches, arthritis, neuritis, or other vague disturbances.

The types of disease, however, affecting these sinuses which I wish to discuss today are usually much more difficult to recognize than are the suppurative types which I have just mentioned. They are in fact at times almost impossible to diagnose even in the hands of the most competent rhinologist and radiologist. The types of disease of which I am speaking are those seen following some acute infection which may be entirely forgotten by the patient, that has terminated in a chronic inflammatory process affecting the mucous membrane of these sinuses. For instance,

a chronic hyperplasia, cellular infiltration or a hidden polypoid degeneration in which oftentimes no pus or discharge can be demonstrated either with suction or lavage.

Unlike the suppurative types of infection, these conditions often offer us very little from the standpoint of history, symptoms, or clinical examination.

It is, in fact, not unusual for these sinuses to be affected with these types of disease, and the patient give no history at all of any nasal disturbance. Nor is it unusual for repeated rhinological examinations to be negative. The absence of any nasal discharge with or without suction is not infrequently the case. The absence of polypi in the nasal chambers is not infrequent. In other words, the nose and pharynx may be normal in appearance, while the posterior ethmoidal or sphenoidal membranes may be suffering from hyperplastic changes or a polypoid degeneration which is acting as a seat of infection or toxemia to the patient.

No doubt due to the frequent absence of any objective signs of sinus infection and the lack oftentimes of any nasal symptoms, these sinuses have frequently not been suspected, and the patients have been classed as chronic sufferers.

Only in recent years have these types of disease in these sinuses been given much space in literature. Today is different. Many cases have been reported in the last few years, proving by operation and pathological study that these sinuses and these types of disease are not infrequently the source of infection in many cases of retrobulbar neuritis, as well as in many cases of chronic headaches, arthritis, and neuritis, despite the absence of objective signs of sinusitis.

Some over two years ago while working in an eye, ear, nose and throat hospital, a white man, aged 34, was admitted to my service complaining of impaired vision in his right eye and frequent attacks of headache over his right frontal region. The history of the headaches dated back to 1918 when he had influenza, the impaired vision had only been noticed a few days. There was no history of any nasal disturbance other than an occasional cold. On examination it was found he had a diminished visual acuity and a concentric contraction for form and colors in the right eye along with a central scotoma for red. Even though the fundus showed no visible changes, a diagnosis of retrobulbar neuritis of the right eye was made. The left eye was normal in every respect. An examination for the focus of infection was at once started. Nothing could be found in the common seats of infection, so an X-ray of the posterior sinuses was requested. On the report of the radiologist who reported pathology in the right posterior ethmoids, with the history of headaches dating from the attack of influenza and the findings in the right eye, it was decided to operate. Following a sub-mucous resection which I did in order that I could have more space, I removed the middle turbinate, completely exenterated both anterior and posterior ethmoidal cells, and opened the sphenoidal sinus on the right side. During the whole operation no pus or

discharge was demonstrated. The only evidence of pathology was the markedly thickened hyperplastic mucous membrane of the posterior ethmoid cells, which were very extensive and practically filled the whole posterior superior portion of the right nasal chamber. Two weeks following the operation the right eye had returned to normal in every respect. Two months later the right eye was still normal and the patient had been absolutely free of any headache since the operation. Even though I haven't been able to follow this case, I feel sure the origin was in the posterior ethmoidal cells, whose membranes were suffering from a chronic hyperplastic condition.

Another case, a girl 20 years of age, came into my office eighteen months ago with a history of recurrent attacks of headaches for the past two years which were associated with a distinct pain in the back of her right nostril. The attacks dated from an acute cold and an acute otitis media two years ago. On examination no evidence of sinus infection could be seen. Both eyes were normal and no general condition could be found to account for the headaches. Treatment of shrinking the nasal membranes and installation of argyrol and ephedrine tampons were used to no effect. Cocainization of the spheno-palatine ganglion with the application of 3 per cent solution of silver nitrate was used to no effect. An X-ray of both anterior and posterior nasal sinuses was made by Dr. H. B. Ivey, who reported pathology in the right ethmoids. Even though doubtful of what my results might be, I operated on the right side. On operating no pathology was seen until I had removed the middle turbinate and a greater portion of the ethmoidal cells, at which time I began to find some cells whose membranes were undergoing polypoid degeneration. These cells were removed. The sphenoid sinus was not opened. The patient made an uneventful recovery. I received a card from her last Christmas telling me she was doing fine and had had no more headaches or trouble with her nose. In this case, the points which interested me were the facts that no objective evidence or sinus infection was present on rhinological examination, and the diseased cells were hidden in the mass of other ethmoidal cells which appeared normal.

Two years ago, having worked in a clinic where a great deal of study was given these obscure types of sinusitis, and having seen them found as the origin of several cases of monolateral optic neuritis, arthritis, neuritis, etc., and having personally, in my limited practice, benefited several chronic headache sufferers by investigating and approaching these sinuses surgically, regardless of the absence of pus or polyps visible in the nasal chambers, makes me feel justified in suggesting that you examine these posterior nasal sinuses very carefully in all cases after the more common seats of infection have been eliminated regardless of the lack of any nasal disturbances or negative rhinological examination. By doing so, I feel that you will find the cause of some of your obscure cases. I suggest, too, that you keep these sinuses in mind in your patients who come in complaining of one or more vague disturbance; for instance, pain in and

behind the eye ball, hemicrania, morning headaches, or pains in or about the junction of the head and neck posteriorly.

Whatever the physiological interpretations may be in these cases improved or cured by opening and ventilating these sinuses in the absence of pus in the nasal chambers, I feel that it is more justifiable than giving the patient no hope for cure and allowing him or her to become a chronic sufferer, especially after all other sources of infection have been eliminated and there is any evidence at all that these sinuses may be the origin.

DISCUSSION

Dr. Louis N. West, (Raleigh): There is one thing I want to ask about, though it seems I am criticizing everybody. I want to find out where Dr. Bizzell gets his X-ray report from. I am taking my own X-ray pictures and can not read my own. But you can not get an X-ray man to make X-rays for you and make a report on the ethmoids and sphenoids to save your life. The worst patient I have had in the last month my nurse in the office treated the wrong side of the nose and cured the patient in two days and got me a letter saying it was the finest operation I ever had. Now, I believe we have as good an X-ray man at home as anybody else, but you can not take his work. I take my own X-ray pictures and can not always interpret them.

Dr. H. B. Ivey, (Goldsboro): In taking the small series we had with Dr. Bizzell, we used the Grainger method of taking the posterior nasal sinuses, using the mask(?) at the ..... degree angle, which gives you the Grainger line and throws the posterior sinuses just above the ethmoid. I have not been able to make a report on all of these, but those I reported as positive proved to be positive on operation. The sinus plates are very hard to read and very often we feel that we would like to lose a plate or do something like that before we report to the ear and throat men. But the ones that we were positive about were positive at operation. I do not mean to say that I could give you a one hundred per cent report in all cases. I don't believe any other X-ray man could have. I know your men in Raleigh could not, and they are some of the best men in the State.

Dr. S. R. Taylor, (Greensboro): I am very much interested in Dr. Bizzell's paper and especially in one part of it—the part about acute retrobulbar neuritis. There is a lot of material written about this pro and con, and I think most of us who are following the literature are pretty much fed up on it. But I think there is a more conservative note sounded in the literature now than a few years ago. Just recently Dr. ....., of France, has made a summary of all the literature, coupled with his personal experience. He has shown that approximately 85 per cent in his experience of retrobulbar neuritis cases, get well with operation and about 85 per cent get well without operation. He has found that about two-thirds of his retrobulbar neuritis cases turn out to be multiple sclerosis. So it seems to me we should be very careful about going into these noses until we are positive what we are going to get into. Doing a radical

ethmoid and sphenoid on a patient subjects him to quite a risk, and if we do that on a patient with multiple sclerosis I don't think we are going to do him much good. So before going into these cases I think we should have them examined by a neurologist and look also for everything in the way of infections of teeth, tonsils, and everything else before we go on. I myself am rather conservative on this point.

Dr. J. S. Norman, (Hickory): I should like to cite an experience I have had along the line of work Dr. Bizzell has been doing. It was quite astonishing to me. I was called in consultation to see a man about 35 years of age who went blind in both eyes on a Wednesday afternoon. He was examined by some doctors, and I was called on the Monday morning following. The man could not discover any light from the ophthalmoscope at all; there was no vision at all. On the next Wednesday that man was brought to the office and I took a plate and observed that he had some haziness of his antrum and decided that I would open those up, which I did. I did a Douglas and used a rasp and cleared a large opening. That was done in the morning. Coming back from dinner, to my astonishment the nurse told me that this man saw through a window a telegraph pole, and in two weeks he had good vision. He is now driving a truck.

Another case was a young lady with a similar line of symptoms. I did an antrum operation on one side, and she cleared up, but the other eye became affected, on the other side. Following about four days afterward, after washing out the antrum on the left side, the right side was affected, and that cleared up. The only pathology I saw there was a haziness on the lining membrane of the antrum, with no infection showing up at all.

Dr. V. M. Hicks, (Raleigh): I have been profoundly interested in this discussion of Dr. Bizzell's paper and in his paper. I do think that it is presenting to us a very definite problem that we are confronted with frequently in our offices and not infrequently as an emergency proposition. Patients are coming into my office and yours who have suddenly gone blind, and they want something done. I recall very vividly cases, and I am sure you do, where we are put to it to know just what we will do. There is a definite optic neuritis; and they are not infrequently young individuals, with no sign of any general nervous disorder; and you just must do something for them. I have gone through the mill with them; I have had the X-ray man X-ray them and find nothing, and I have had the nose man examine them and find nothing of particular interest in the routine examination of the nose, and on general examination of the patient find nothing, yet by insisting I have had those patients' posterior ethmoids exenterated, and often while on the operating table their symptoms of pain and pressure are relieved, with immediate improvement in vision and practically normal vision following. I think in those cases we are dealing with some form of infection in the posterior ethmoid cells in an individual whose anatomy in that particular region is different from the anantomy of normal patients. The results I have seen have been astounding. I believe it is one type of pathology that requires radical

treatment, and I believe that exenteration of the posterior ethmoid cells is a conservative treatment after all. I have never seen any case in which there is any permanent injury from exenteration of the posterior ethmoid cells, and the cases which I have in mind at the present time are perfectly remarkable. I have seen patients in whom the operation was done on one side who never recovered their vision, and then the operation was done on the other side and normal vision was restored. I believe the radical operation in these cases is the logical procedure.

Dr. Louis N. West, (Raleigh): I have seen cases like this, as Dr. Hicks has, and I do not believe in the radical operation. I believe half of this is hysteria on the part of the patient.

Dr. Bizzell, closing the discussion: Answering Dr. West, it is difficult to X-ray these patients and tell anything about it. You do have to use the X-ray in these cases as you do the laboratory, take it in conjunction with your clinical findings. The most difficult type of patients to examine are those in whom you have no ocular manifestation. They usually get contraction for form and color, and the pathology usually lies on the side of greatest contraction. Usually there is a diminution of color acuity and sometimes diminished acuity at the same time. But the main thing the ophthalmologist must look for is contraction of form and color, with diminished acuity at the same time.

In regard to what Dr. Taylor said about multiple sclerosis, you notice in my paper I said all other forms of focal infection must be looked for first. I think you should get all the tests you can, get the colloidal gold curve, and examine the fundus. I myself am conservative, but I do feel we can be conservative to the point where it is detrimental to the patient.

THE OPHTHALMOSCOPICAL SIGNS OF RETINAL ARTERIOSCLEROSIS AND THE CONDITION OF THE RETINAL ARTERIES AS AN INDEX TO THE CEREBRAL ARTERIES AND TO THE ARTERIES OF THE BODY GENERALLY

By W. P. Speas, M.D., Hickory

It is not the intention of the writer to present any new facts or theories in regard to retinal arteriosclerosis, but rather to review a part of the literature bearing on the subject and to draw whatever conclusions such a review seem to warrant. It seems to be a generally accepted fact that no single detail in an ophthalmoscopic study of the fundus is of more importance than the condition of the arteries and the veins. This is true as regards the condition of the retina and other structures of the eye itself; it is also true when the eye is examined in relation to general or cerebral conditions. We have never gotten beyond the adage that "A man is as old as his arteries," and there is no other place where their condition may be studied as well as the eye ground. While it is not true without

exception that the condition of the retinal arteries is an index to the condition of the arteries elsewhere in the body, it is nevertheless the rule that the ophthalmologist is in position to give the patient and physician valuable information in this respect.

Surely there is no more beautiful picture in nature than that presented in ophthalmoscopic examination. Here one sees a cranial nerve spread out before him with the blood supply in action magnified 15 times. For such a picture the world is indebted to Helmholtz, who in the year 1852 invented the ophthalmoscope. Within a surprisingly short time ophthalmologists recognized many fundus conditions just as we know them today. Bader,[1] 1868, describing "retinitis during albuminurea," says: "Peculiar changes described by some as 'sclerosis' have been found in all the coats of the blood vessels, especially in those of the small arteries and of the capillaries of the retina and choroid. The vessels have appeared unusually tortuous and flattened in many places, with their walls thickened by a homogeneous, slightly light reflecting 'amaloid' substance. In places the thickening of the walls has caused occlusion of the vessels."

Most important are the ophthalmoscopic signs of retinal arteriosclerosis. While much had been said concerning sclerosis of the retinal vessels during the first forty-five years of the use of the opthalmoscope it remained for Marcus Gunn[2] to systematize the ophthalmoscopic findings. In 1898 he published his remarkable article which brought order out of a condition about which there had been much uncertainty. Except in some details our knowledge of the condition today has not advanced beyond where he left it. He pointed out:

1. The arteries are smaller, tortuous and irregular, with possible local increase in breadth.

2. The central light streak is narrow and exceptionally bright. Especially is this true of the secondary and tertiary branches.

3. There is loss of transparency, as evidenced by inability to see a vein through an overlying artery.

4. The arteries exert pressure on the veins where the arteries and veins cross one another, as evidenced by the loss of the light streak on each side of the crossing early, and later by an apparent cutting out of a section of the vein at this point and an engorgement of the vein peripherally.

5. There is edema of the retina as evidenced by a lack of retinal reflex.

Probably one of the very earliest signs is irregularity of the veins. Oatmen[3] says that when arteriosclerosis strikes the retinal vessels the first change is a dilatation of the arteries with tortuosity and "locomotion pulse." Locomotion pulse is to be distinguished from pressure pulse, and is characterized by a lateral movement of the artery, usually at a sharp bend. Raehlmann[4] found locomotion pulse in 10 out of 44 cases examined and tabulated by him. He further states that it is noticeable only in very thin vessels that have lost their elasticity. Thoma[5] quotes Raehlmann as

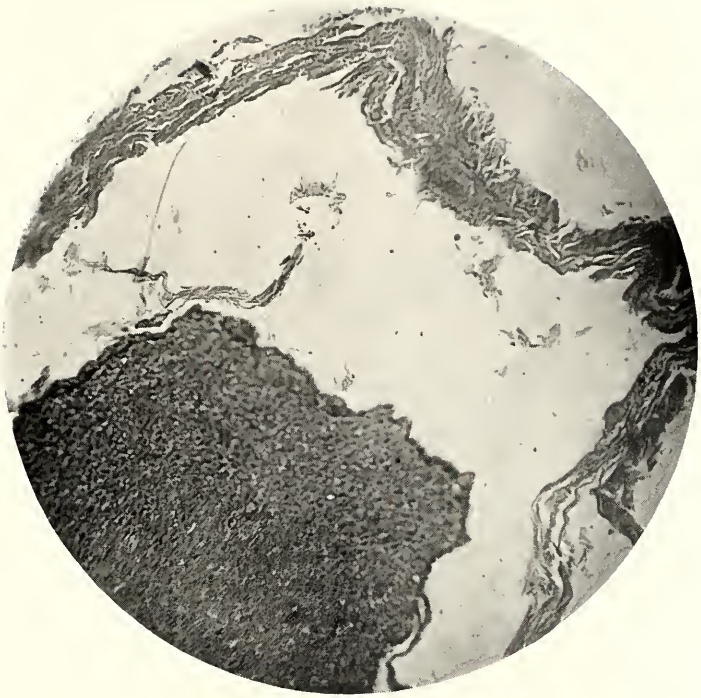

Fig. I. (Magnified 160x1)

Organized thrombus from the basilar artery. Patient white male, age 74. Clinical diagnosis: Senile dementia, myocardial degeneration, chronic bronchitis, general arteriosclerosis. Blood pressure 110-80. The space between the vessel wall and the thrombus is due to artefact or to post mortem changes. The vessel wall is thinned. The thrombus is organized, showing numerous embryonic connective tissue cells throughout. Elastic tissue fibers from the intima adhere to the circumference of the mass. (Specimen obtained at autopsy by the writer at the Philadelphia General Hospital. Autopsy No. 20348.)

being of the opinion that locomotion pulse is at first due to acceleration of the blood current and to the force of the blood wave toward the convexity of the curved vessel.

De Schweinitz[6] mentions as early signs, first, corkscrew appearance of the small arterioles and capillaries, the larger vessels appearing normal; second, slight flattening of the veins as they pass under the arteries; and third, a dull red appearance of the nerve head.

One of the most common signs of well established sclerosis is irregularity in size and breadth of the arteries, judged by the contained column of blood. This irregularity is due to a proliferation of the endothelial lining and elastic fibres of the intima. An artery may be of regular breadth in part of its course, become irregular for a variable distance, and then continue regular again.

Retinal hemorrhages are an important sign. They are not seen early, but are a common occurrence in the later stages. There are three types, depending upon their location, whether deeply situated or superficial. Where they are deeply situated they are roughly circular; when in the nerve fiber layer, they are flame-shaped; and when pre-retinal, they take the form of the capital letter "D," with the straight side up. The flame-shaped are the most common. When seen only occasionally and of small size, they are of no special significance. A marked increase in their number, however, should be looked upon as forecasting serious symptoms. They are probably due to an impairment in the nutrition of the vessel wall and not to an increase in tension according to Foster Moore.[7] Supporting this view he mentions the fact that they are generally more numerous near the end of the patient's life, when there is not an increase in the blood pressure. As a further proof that they are not caused by an increase in blood pressure, he mentions the fact that they are a common occurrence in pernicious anemia and leukemia, in which conditions the blood pressure is not increased.

Heine[8] says that hemorrhages are caused by changes in the condition of the blood or the vessel wall. He gives as specific causes of retinal hemorrhage in the order of their importance, chronic nephritis, diabetes, atheroma, scurvy and polyeythemia. He further states that the hemorrhages of diabetes and nephritis are probably due to an association arteriosclerosis, and that hemorrhages present in the retina are pretty strong evidence of this condition. Extensive hemorrhages are often due to venous obstruction. Zentmayer[9] states that the hemorrhages seen in tobacco-alcohol poisoning are probably due to associated arteriosclerosis.

Hemorrhages may be absorbed without leaving a trace, or may leave white or yellowish spots—"absorption areas." Proliferative retinitis may be the end result in cases of large hemorrhage.

Tortuosity of the arteries is a common sign, but is of no value unless accompanied by other signs of sclerosis, since it is often a normal condition. It is most natural to think of tortuosity as being due to the high arterial tension which is often present in the peripheral vessels. Marcus

Gunn held the view that owing to the loss of elasticity of the vessel wall and narrowing of the lumen, tortuosity was due to vis-a-tergo acting on a vessel that has lost its normal carrying power. Foster Moore[7] states that tortuosity is due in many cases to an increase in the length of the vessel, and doubts that the pressure in them is increased. It is not conceivable that the thickening in the vessel wall is in the transverse direction alone. Length and thickness are increased simultaneously.

The arterio-venous crossing sign is one of the most constant. By studying these crossings it is possible not only to discover the presence of the condition, but to judge the extent to which it has progressed. When seen early, there is only a small amount of flattening of the vein. Later, the vein is pressed out flat. If the vein passes under the artery, a section appears to be cut out where the artery crosses it. If it passes over the artery, it is lifted high by the more rigid artery. Normally a vein may sometimes be seen through an artery, but in sclerosis this can never be done.

Where a vein crosses an artery it tends to parallel it before and after crossing, and at the crossing it goes the shortest way across, which is more nearly at right angles than if it continued in a straight course.

PATHOLOGY

In the new-born child there is present in the arteries a well-marked line of elastic tissue in the intima between the internal elastic membrane and the endothelial lining. As age advances this elastic tissue normally thickens till in middle life and old age it forms a well-marked band.

In the arteries of the retina, the chief changes in sclerosis are confined to the intimal coat. There is proliferation of the endothelial lining and of the elastic fibres. Since thickening of this coat is a physiological process it is not always easy to distinguish between physiological and pathological thickening. The chief difference lies in the irregularity both in distribution and type. In arteriosclerosis there is an endarteritis. The same condition obtains in the veins, but to less extent. Cross sections may show a concentric construction of the lumen from new layers of elastic tissue sometimes to the point of obliteration. This accounts for the "silver wire" appearance of the smaller arteries sometimes seen in this condition. The more common condition is for excrescences to project into the lumen of the vessel, showing in section as crescent shaped or sickle shaped thickening of the elastic tissue layer. High magnification shows that new formed elastic tissue fibres have been lain down, layer on layer, encroaching on the lumen, retaining the endothelial covering.

The deeper layers often show atheromatous changes. Usually the only reaction observed in the medial coat is that it seems to give way and sometimes to become thinner in the presence of the changes just described. In some infectious forms of arteritis, especially syphilitic, there is an infiltration of the adventitia. The veins show this perivascular infiltra-

Fig. II. (Magnified 160x1). Section of a retinal artery.

Patient white male, age 54. Clinical diagnosis: Apoplexy, cerebral hemorrhage. Autopsy showed only slight sclerosis and atheroma of aorta, heart negative; brain showed glioma of left temporal lobe, with intense congestion; kidneys negative. There is thickening of the vessel wall; the dividing line between the media and muscularis is not discernible. The whole wall is a homogeneous, structureless mass. The adventitia is infiltrated with round cells. This is the type of vessel that shows the white stripes of perivasculitis in the ophthalmoscopic picture. (Specimen was obtained at autopsy by the author at the Philadelphia General Hospital. Autopsy No. 20362.)

tion more often than the arteries. It corresponds with the white lines of perivasculitis so often seen ophthalmoscopically.

Certain serious cerebral manifestations are closely associated with retinal arteriosclerosis. When one considers the embryological relation between the retinal and cerebral vessels, it is not surprising that throughout life the one bears a close relation to the other. For that reason the ophthalmologist stands in position to be of great assistance to the physician and patient in matters of diagnosis and prognosis in patients of this class.

R. Foster Moore[7] investigated the matter from two opposite standpoints. On the one hand the incidence of gross vascular cerebral lesions was investigated in 66 patients who attended the Moorfields Eye Hospital for symptoms which were found to be dependent on retinal arteriosclerosis. On the other hand the condition of the retinal arteries was studied in 44 patients admitted to the wards of St. Bartholomew's Hospital with gross cerebral lesions. As regards the first group, the condition of 52 was ascertained at the end of seven years. Thirty-eight were known to be dead. Of these 17 had died either of cerebral hemorrhage or thrombosis; of the remaining six had developed vascular lesions of the brain, such as hemiplegia or moniplegia. That is to say that in the course of seven years 23, or 44 per cent had suffered from a gross cerebral lesion, which had been fatal in 17 cases. As to the second group of 44 patients, the physician in charge had diagnosed them as having a gross cerebral lesion. The retinal vessels were examined through the dilated pupil.

In 13 (30 per cent) there was no evidence of retinal arteriosclerosis.

In 31 (70 per cent) there was a sclerosis of the retinal vessels in varying degree, from moderate to severe. Knapp[10] on the other hand, says it is remarkable how frequently no changes could be seen ophthalmoscopically in the vessels of the fundus in pronounced sclerosis of the cerebral vessels confirmed by autopsy. He further states that in marked sclerosis of the carotid and ophthalmic arteries, the central and retinal arteries in many cases have been normal. It must always be borne in mind that arteriosclerosis may be present to some extent and still be ophthalmoscopically invisible. Deyl[11] found this to be true in a number of cases examined by him.

The relation between the retinal vessels and vessels of the body in general is not so constant as most investigators find between the retinal and cerebral vessels. While sclerosis of the retinal vessels usually is an indication of general arteriosclerosis, this is not always the case.

O'Hara and Walker[12] studied the relation between retinal and peripheral sclerosis and arterial tension in a series of 100 patients. Fifty patients were found with systolic pressure under 145 whose retinal arteries were but slightly sclerosed, but over half of whom showed marked sclerosis in the peripheral vessels. A second group of fifty patients were found with peripheral pressure over 145 whose peripheral vessels in most cases showed only moderate sclerosis, but whose retinal vessels were found to be

markedly sclerosed. Further emphasizing the possibility of a lack of relationship between the peripheral vessels and the smaller vessels as represented by the vessels of the fundus, one case with calcified radial vessels showed only "questionable" pressure effects and unevenness of the retinal vessels; while in another case with only slightly thickened radial vessels, the retinal vessels were so sclerosed that they were represented by mere white lines.

Hertel[13] shows that ophthalmoscopic examination is not always a true criterion by which to judge the condition of the vessels of the body. He selected 14 patients with high degree of angiosclerosis, who in life had not shown any visual disturbance. Nine of these had shown absolutely normal fundi ophthalmoscopically. One of these, a man of 40 years, revealed severe sclerotic changes at autopsy. The coronaries, aorta and the vessels of the lungs had plague-like lesions. In these cases with ophthalmoscopically normal fundi microscopic examination showed sclerotic changes in the vessel walls, especially in the central vessels. While his primary object was to prove that sclerosis may reach a high degree without disturbing vision, he also shows conclusively that the condition may be present in the vessels of the body generally without the retinal vessels being involved sufficiently to be ophthalmoscopically visible, and vice versa.

CONCLUSIONS

1. The early recognition of retinal arteriosclerosis is of greatest importance to the patient.

2. The condition of the retinal arteries is a safe guide in most cases by which to judge the condition of the cerebral vessels.

3. While retinal arteriosclerosis usually means general arteriosclerosis, this is by no means universally true.

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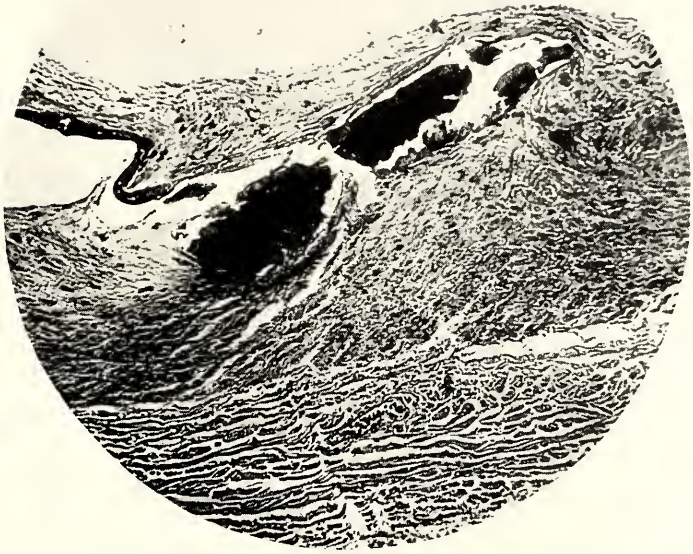

Fig. III. (Magnified 160x1). Section of cerebral artery.

Patient white male, aged 56. Clinical diagnosis, epidemic meningitis, terminal broncho pneumonia. Post-mortem revealed slight sclerosis of the aorta, myocardial degeneration, and purulent meningitis. The intima shows numerous embryonic connective tissue cells, breaking down of the internal elastis membrane, and calcareous degeneration. The muscularis is giving away and thinning in the presence of the hyaline mass. (Specimen obtained at autopsy by the author at the Philadelphia General Hospital. Autopsy No. 20384.)

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DISCUSSION

Dr. V. M. Hicks, (Raleigh): I want to say that this has been a very pleasing paper to me. It indicates a great deal of study on the part of Dr. Speas, it is well gotten up, thoroughly scientific, and very exhaustive; and it is inspiring, as well, and would be of help, I am sure, to all of us if we would keep this in mind more definitely in our work. From the practical standpoint we are often called in consultation to see cases, and the problem before the internist is the condition of the arteries of the central nervous system. I find in my own experience not infrequently I do not see enough in the retinal vessels to say that a particular case is a case of arteriosclerosis, but at the same time the internist says the blood pressure is unusually high, perhaps 190 or 200. Those cases often respond very nicely to the treatment instituted by the internist, and the blood pressure falls, indicating to my mind that it is not an arteriosclerosis but some toxic condition or some disorder of the glands of internal secretion which has temporarily produced this hypertension. From the practical standpoint, I would base diagnosis of arteriosclerosis on the appearance of the end vessels—the vessels toward the periphery; if they are unusually tortuous I take that to be a sign of persistent hypertension. Next some changes in the veins as they cross the arteries. I think those two signs are important for us to keep in mind in examinations of the retina.

Dr. C. R. Reaves, (Greensboro): I can not add anything to Dr. Speas' paper, but I want to say that the cases in which this arteriosclerosis interests us more than in any other are those in which we can aid the internist. We do not get enough of those examinations. I heard a man say the other day he does not believe a man can practice medicine scientifically now without an ophthalmoscope any more than he can without a stethoscope. I think we ought to get this before the internist, because in Greensboro, at least, I do not believe there as many fundus examinations made as should be made. I believe it would do more good to get this paper before the other sections than before this one.

NON-TUBERCULAR LESIONS OF THE LARYNX IN THE TUBERCULOUS

By Jos. B. Greene, M.D., Asheville

In considering non-tuberculous lesions of the larynx in the tuberculous we must bear in mind the very great frequency of laryngeal tuberculosis as a complication of pulmonary tuberculosis. It is generally accepted that this complication occurs in at least 25 per cent of all cases, and in the more advanced stages of the disease the percentage is somewhat higher. Accord-

ing to Fetterolf, in a series of 100 autopsies of patients dying of pulmonary tuberculosis, 83 per cent, showed positive microscopic evidence of laryngeal tuberculosis. Bearing in mind the frequency of laryngeal tuberculosis in the tuberculous, we should think first of this complication when symptoms are directed to the larynx, particularly so if there is pain or hoarseness. In other words, the case should be regarded as tubercular until proven otherwise.

However, a patient suffering from pulmonary tuberculosis possesses no immunity from other laryngeal affections, but if one takes a careful history of the case, noting the situation and appearance of the lesion, together with the age and sex, it is seldom that one will err in reaching a correct diagnosis. In this discussion I shall leave out of consideration such rare affections of the larynx as astinomycosis, leprosy, and lupus, none of which have I encountered, but shall speak only of those conditions generally met with in special practice.

The most frequent non-tubercular lesion met with in the tuberculous is undoubtedly simple catarrhal laryngitis. According to Lockard, the tubercular patient is especially subject to this type of laryngeal affection, probably due to irritating cough, bad environment, and unhygienic living which precipitated the pulmonary attack. It has been my observation that the "rest cure" places a heavy burden, so to speak, on the nasal mucous membranes by its effect on the local circulation inducing an obstructive condition of the nose. This obstruction can readily be a predisposing cause of simple laryngitis. In cases presenting symptoms of acute simple laryngitis, it is at times impossible to make at once a positive diagnosis, but the patient should be placed on silence and simple therapeutic measures instituted, until sufficient time has elapsed, usually a week or so, when a positive diagnosis can ordinarily be made. It is not a waste of valuable time as the treatment of the two conditions at this stage is practically the same. However, if the redness in the larynx is localized in certain portions of the larynx, as one chord, or if there be noted certain areas of red infiltration, we should strongly suspect a tubercular complication. We should bear in mind the strong predilection of laryngeal tuberculosis for the posterior part of the larynx—the commissure, and ends of the chords.

Chronic catarrhal laryngitis is very frequent in the tuberculous, and may offer some diagnostic difficulties. However, a close inspection of the larynx, if it be tubercular, will usually show an asymmetrical character of lesion, whereas, the non-specific type of disease shows a uniform involvement of the interior of the larynx. The symptom of hoarseness is less marked and pain is rarely present in the simple type of affection. Should there be present a true erosion, which can be easily overlooked, especially when located on the posterior surface of the epiglottis, we must regard the affection as other than a simple catarrhal laryngitis.

Pachydermia laryngitis is a type of chronic laryngitis which may at times simulate tuberculosis of the larynx. However, the tubercular lesions which also attack the posterior ends of the chords do not show the promi-

nent excrescence seen on one chord with a corresponding depression at times on the opposite side. There is also usually present some associated infiltration of the posterior commissure which bears a close resemblance to a tubercular lesion, but the surface presents a more even appearance and there are no signs of true ulceration. A history of cases of pachydermia usually reveals some abuse of the voice, and there may have been some chronic infection of the sinuses and tonsils. The voice is usually only slightly affected, if at all, in contrast to the tubercular lesions, and pain is not present.

Cysts are interesting and rare conditions of the larynx and are usually discovered by accident. They only produce symptoms when large enough to cause obstruction, or when so situated as to interfere with phonation. The usual situation for such growths is on the anterior surface of the epiglottis. The three cases which I have observed were all in this locality and were in tuberculous individuals. The appearance of these cystic growths is so characteristic that no difficulty in diagnosis is encountered.

Recurrent nerve paralysis causing immobility of one chord, usually the left, occurs in the tuberculous and is probably due to pressure from pleuritis adhesions. However, Wood, in reviewing the work of Manassa, attributes this lesion of the recurrent nerve to pressure of trachea-bronchial glands. Against this view is the frequency of glandular involvement in children and the infrequency of recurrent nerve paralysis in the very young. The chief symptom produced in these cases is hoarseness which is easily explained on laryngeal examination, provided no tuberculosis of the larynx is present. Two such cases of this type have occurred in my practice, both in women and on the left side of the larynx.

Papillomata, the most frequent non-malignant laryngeal growth, usually has its inception in childhood when laryngeal tuberculosis is almost unknown. In any event, the appearance of these non-inflammatory lesions, usually of the chords, is so characteristic that the diagnosis offers little difficulty. Hoarseness is the chief symptom and obstruction takes place only where the growths involve an extensive area of the larynx. Vocal nodes, situated at the juncture of the anterior third of the larynx with the posterior two-thirds of the chords has for their only symptom hoarseness. This may suggest a tubercular complication, but the appearance of two small corresponding nodules on the anterior part of the chord makes the diagnosis comparatively easy. In one of my two cases a careful history of the case, so important in all laryngeal conditions, excluded the possibility of the hoarseness being due to a tubercular larynx. The patient was a woman of 35, a sufferer with pulmonary tuberculosis for a period of about five years, who had complained of hoarseness since the age of thirteen. Examination of the larynx confirmed what the history strongly suggested, that the lesion in the larynx was not tubercular in character. The other case was the association of vocal nodes in a young woman of 25 who had also a characteristic tubercular lesion of the posterior part of her larynx.

Syphilis of the larynx occurring within the larynx proper has so many points of resemblance to tuberculosis that we are at times confronted with difficulties in reaching a positive diagnosis. In this connection Sir St. Clair Thomson says there is no difficulty in distinguishing tuberculosis from secondary syphilis or a simple gumma, but with ulcerating syphilis the task is not so easy.

As Spencer wisely says, the history in such cases is of almost no value. However, the Wassermann test comes to our aid, though we must bear in mind its limitations.

Barring such unusual conditions as leprosy, yaws and acute malarial fever, a positive Wassermann on repeated examination means syphilis. However, this is not proof positive that the lesion in the larynx is syphilitic. It may still be tubercular. A negative Wassermann means little, for the test may be vitiated by the previous ingestion of alcohol, or the administration of anti-syphilitic treatment.

Syphilitis ulcers occurring in the larynx are deep and crater-like with a foul necrotic base, as distinguished from the tubercular lesion which is superficial in character with an irregular border having a base covered with granulations. Syphilitic lesions occur on the anterior surface of the epiglottis while tuberculosis usually attacks the lingual surface or the upper margin. Deep ulcerative lesions in the upper larynx, particularly if there is present a red zone surrounding this necrotic area, suggests syphilis rather than tuberculosis. Syphilitic lesions of the arytenoid are characterized by a red inflammatory swelling which soon shows deep crater-like ulceration. This is unlike tuberculosis of this region which usually attacks both arytenoids and ulceration, if present, occurs late and is superficial in character. There has seemed to me a striking tendency for syphilis to attack the tissues at the root of the tongue, near the base of the epiglottis, which is not the case in tuberculosis.

In reference to pain, it has been my impression that this symptom has very little diagnostic value. If the ulcerative lesion occurs on the epiglottis, or the arytenoids, the paid may be quite as severe in syphilis as in tuberculosis. Lesions within the larynx proper are not particularly painful, as a rule, whether they be tubercular, syphilitic, or cancerous. Recently a man, aged 36, with moderately advanced pulmonary tuberculosis, came to me complaining of severe pain on swallowing which interfered with his taking food. This had lasted for several weeks. Examination showed slight swelling of the epiglottis, general redness of the interior of the larynx. There was noted also an ulcer on the left side of the root of the tongue. The appearance of the lesion suggested syphilis, which was confirmed by the finding of a 4+ Wassermann, and relief of symptoms following a few doses of anti-syphilitic treatment. It may be necessary to resort to the use of the therapeutic test of anti-syphilitic treatment in making a diagnosis of syphilis from tuberculosis, and when such measures are taken, it is well to use caution in the use of iodides on account of the possible danger of producing laryngeal oedema.

The cases which give us most concern are those of suspected cancer in the tuberculous, but fortunately such puzzling cases are rare, for laryngeal tuberculosis is a frequent complication, while cancer is rarely met with in the tuberculous. It is only in early or moderately advanced cases of pulmonary tuberculosis that a positive diagnosis of cancer is important, for obviously the advanced cases would not be suitable for surgical removal. In making a diagnosis we must bear in mind that cancer is most frequently found in those past forty years of age, while tuberculosis occurs most frequently in those under 40 years of age. Cancer of the larynx is rare in women, which is not the case in tuberculosis.

Intrinsic cancers, and benign tumors as well, are most frequently found on the anterior part of the chords, while tuberculosis shows a decided preference for the posterior ends of the chords—the commissure and arytenoids. In the great majority of cases of intrinsic cancer, the first symptom is hoarseness, whereas in tuberculosis the patient's first complaint may be slight discomfort referred to the larynx, and increase of cough. When the tubercular lesion is confined to the chords pain is not a feature. Aside from the location, previously referred to, there is often a distinct difference in the appearance of the two lesions, but cases do arise which tax one's skill to the utmost in making a correct diagnosis. Even in the early stages of laryngeal tuberculosis there is noted some inflammatory redness, in contrast to incipient cancer. There is present at times a general redness of the larynx.

Tuberculomata is the type of lesion which most resembles cancer, but fortunately this form is not often encountered, and when found is usually on the posterior half of the larynx, particularly the chords. Cancer in its earliest stage is usually a non-inflammatory, warty growth on the chord, producing no symptoms excepting that of huskiness or hoarseness. It later develops into an irregular cauliflower mass, with all the characteristics of malignancy. At this stage it could hardly be mistaken for tuberculosis. Impaired mobility of the chord is not observed in cancer until the deeper structures are involved, so this symptom, so often referred to, should not be looked for in the very early stages of cancer. However, in the deeper type of laryngeal cancer, which MacKenty describes as "subsurface," defective movement of the chord is an early symptom. In tuberculosis, impaired mobility of the chord is not an early symptom, though it does occur late in the disease, when the diagnosis is relatively easy.

Extrinsic cancer involving the epiglottis, arytenoids, or aryteno epiglottis folds is relatively rare, and have few points of resemblance to tuberculosis. In case the arytenoid is involved, it is usually confined to one side, whereas tuberculosis attacks both arytenoids. Pain is not considered a symptom of cancer in this region, but when ulceration takes place, it is quite as severe as in tuberculosis.

The question of biopsy in suspected cancer of the larynx has been under discussion for a number of years, but no definite conclusion has been

reached, except that it is not wise to delay operation too long, if the microscope shows positive evidence of cancer. It is my conviction that a biopsy is neither necessary nor wise in reaching a diagnosis between cancer and tuberculosis in the frankly tuberculous individual. It is an accepted fact that the results of microscopic findings are not infallible, in that a negative finding as to cancer means very little, and also that a positive finding may occasionally be made in a non-malignant growth. In the final analysis, as MacKenty says, we must rely upon the appearance and clinical course of the disease made after days of careful study and observation. In the intrinsic type of lesion, undue haste in making a diagnosis is not required.

In my experience over a number of years, it has been necessary in only one case of pulmonary tuberculosis to have a biopsy to determine the presence or absence of laryngeal cancer. This patient, a man of 62, had suffered from pulmonary tuberculosis for a number of years, at times complicated with hemorrhage. His blood Wassermann was negative. He came to me in May, 1927, having been seen by excellent laryngologists who diagnosed it laryngeal tuberculosis, probably the only lesion present at that time. When seen by me somewhat later, there was noted a large red swollen arytenoid on left side, which extended forward involving the left vocal band, obscuring the left chord. The right side of the larynx was normal, no swelling of the right arytenoid being present. The epiglottis was normal. There was present severe pain on left side of larynx, radiating to the ear. The arytenoid presented on several occasions peculiar elevated pustules containing a drop of exudate, which required puncture with the cautery needle. This unusual condition I have never seen in tubercular arytenoids. This was evidently a new picture on the screen, so to speak, and was not characteristic of tuberculosis or any lesion of the larynx with which I was familiar. Dr. MacKenty saw the case in consultation and thought it probably cancer, and advised a biopsy. This was done, but neither cancer nor tubercle was made out. A second specimen was removed five months later, probably from a different region of the tumor, which revealed positive evidence of cancer. The larynx was removed a few days later by Dr. MacKenty, and microscopic section revealed both cancer and tubercle. This case was interesting as having a double infection of cancer and tubercle, and the fact that the first biopsy was entirely negative, showing the importance of clinical findings as well as a microscopic diagnosis.

Four cases in frankly tuberculous patients have come under my observation in recent years, on whom biopsy had been done for diagnosis. Three of the patients were well under 40 years of age, and one had reached the age of 42. Microscopic examination of the specimen removed in each case confirmed the diagnosis of tuberculosis. It has seemed to me that if a careful study of the larynx of these cases over a period of time, as so much stressed by MacKenty and Thomson, had been made, together with a careful chest examination by a competent internist, these patients would

have been spared the discomfort and probable harm incident to the biopsy. Inasmuch as three of the cases were originally intrinsic, and all later became intrinsic, with extension of active tuberculosis of the epiglottis, suggests the possibility that trauma of the laryngeal speculum played a part in the spread of the infection.

DISCUSSION

Dr. Louis W. West, (Raleigh): I happen to have had the privilege in the last ten years of knowing five men whom I consider to be five of the greatest men in tuberculosis in our part of the world—Dr. Miller, in New York, Dr. Lowndes, Dr. Minor, in Asheville, and Dr. Dunn. Those four agree that Dr. Greene knows more about the larynx than any other man in America. I cannot help mentioning him as the fifth man and complimenting him on his paper.

Dr. V. K. Hart, (Charlotte): I should like to ask Dr. Greene a question in relation to his paper; that is, whether the condition he describes as (I believe) pachydermia of the larynx is the same as Thomson describes as a rare condition and which he calls leukoplakia of the larynx.

Dr. M. R. Gibson, Chairman: I am sure we should all be glad to have Dr. Mackenzie discuss this paper.

Dr. George W. Mackenzie, (Philadelphia): I am not prepared to discuss the paper, and I am reserving my time so if there is opportunity I may take up Dr. Clements' case. I should like, however, to say a word about the work of Dr. Greene. I am glad to meet him again. I knew him as an intensive student and have watched with interest his work in Asheville. I myself have been much interested in the subject he presents, and I believe I was the first one in Philadelphia to do a laryngectomy.

I thank you for calling upon me.

Dr. Greene, closing the discussion: I appreciate all that has been said, especially Dr. West's remarks, which I do not deserve. I think probably they are due to old friendship rather than anything else.

As to Dr. Hart's question, in the English literature that might be the case. Leukoplakia of the larynx I have not seen. I think that pachydermia is a distinct entity and that the two should not be confused.

PER-ORAL ENDOSCOPY

By Vance P. Peery, M.D., Kinston

DIAGNOSIS AND TREATMENT OF DISEASES OF THE AIR AND FOOD PASSAGES

In 1858, in New York City, Ernest Krakowizer, of Vienna, demonstrated the vocal cords in a living subject. This was the beginning of laryngoscopy in America. In the same year Ephriam Cutter of, Massachusetts, devised a direct laryngoscope for examination of the larynx, and some time later Killian introduced bronchoscopy into this country with a suspension apparatus. There are other men, too, who have made definite

contributions to per-oral endoscopy, but time will not permit me to mention all their names here. The one man whose efforts have counted most in the development of per-oral endoscopy is, without question, Chevalier Jackson. It was he who devised the distally lighted tube, and to him and his co-workers must go the credit for giving to us a set of practical, safe, delicate, instruments to explore all the accessible parts of the air and food pasages above the pylorus.

In the words of Jackson, "Look and see" is the order of the day. Jackson has made this possible, even in parts of the lungs where it seems to the minds of many men an impossible feat. Per-oral endoscopy, like otoscopy, rhinoscopy, and even cystoscopy, is an accomplished fact—a safe and established procedure, given an adequate instrumentarium, and a trained operator, with the absolute teamwork of two assistants and one nurse.

There is no universal instrument in per-oral endoscopy. They are all rigid tubes, varying in caliber and length, according to the age of the patient and the part of the trachea, bronchi, or lung to be explored. The instruments to be used in these tubes must be strong enough to accomplish the desired end, and yet also very delicately balanced, of the proper size and length, and conforming to proven mechanical and physical laws. Experience has proven just what type, caliber, and length of tube, and just what type, size, and length of forceps is best in dealing with any given problem, whether that be a foreign body in the bronchi, trachea, or larynx, or pathology in the same areas, be that tumor, suppuration, or whatnot. The equipment for handling cases of foreign bodies, lung suppuration, or new growths, in treatment or diagnosis, must necessarily be rather elaborate. For instance, a straight pin insufflated in the air passage of an adult can penetrate a smaller bronchi to the periphery of the lung, requiring a long tube to reach this distance from the teeth, and one of a caliber small enough to penetrate the small bronchi. But if the pin lodge, say, at the carina, a large caliber tube may be used if the pin remains fixed at that spot long enough to be successfully grasped and to manipulate the point into the mouth of the tube. The pin also requires a special type of forceps, the Tucker tack and pin forceps being the best, as a rotation forceps would be practically valueless in this instance as compared to what could be accomplished with the Tucker forceps. We may say, then, that there is a tube and an instrument for every purpose, built especially for that purpose, but which may be used in some instances in several different problems. Of course it stands to reason that we can not use in the small 4 mm. tube for the new-born infant the various large size forceps designed for use in the large adult tubes.

Of all that class of cases suitable for per-oral endoscopic procedure, the foreign body cases are only a small percentage. Of more than 6,000 cases within a short time at the Jackson Clinic, only about 2 per cent were foreign bodies. Yet the public—and this includes the rank and file of the medical profession—always think of a foreign body when per-oral

endoscopy is mentioned. It is in that larger class of pathological lesions which may be caused by numerous factors aside from foreign bodies, that per-oral endoscopy can render the broader service to the patient. When the internist, the surgeon, and the chest man become universally familiar with the possibilities of the laryngoscope, the bronchoscope, the aesophagoscope, and the gastroscope, and when they realize that we have here in actual fact a speculum which can be used in competent hands without mortality, actually revealing to the eye the exact condition existing within the respective passages, then we will have more accurate diagnosis and more rational treatment, we will save more lives and prevent more chronic invalidism.

The foreign bodies which are swallowed or inspirated are varied in size, shape, and character. Anything small enough to go into the larynx or the pyriform sinuses may sooner or later be expected to find its way into these channels, so long as children are allowed to play around with objects in their mouths, or adults persist in using their mouths as pockets for pins or tacks, like upholsterers, for instance. Then, too, certain accidents do occur during operations about the mouth, the throat, and the head, in which broken teeth, instrument parts, cotton applicators, and so on, are insufflated. Loose artificial dentures are recovered fairly frequently. Anything small enough to be admitted to these spaces likewise may be recovered from them with endoscopic procedure, and there is always a solution to the mechanical difficulties if worked out beforehand. There is no treatment for these cases worthy of consideration except endoscopy properly performed.

It is not unusual for a patient who has inspired a foreign body, the sojourn of which causes marked pathology, to be treated for anything from influenza or pneumonia to tuberculosis. There are numerous cases on record at Jackson's and other clinics in which this condition obtained. There is among some doctors a false impression that an inspirated foreign body means death. We have case after case in the literature of these troubles where the doctor has overlooked even a definite history of choking, gagging, and coughing, which cleared up temporarily, though the intruder was still present deep in the respiratory system. The patient is treated for bronchitis, etc., without an X-ray to rule out the possible presence of a foreign body in the air passages, in spite of its fairly frequent occurrence. A diagnosis of asthma is often made, due to the peculiar asthmatoid wheeze of which Jackson speaks. Any chest condition is entitled to an X-ray study, and a definite responsibility is assumed by the man who fails to rule out by X-ray and endoscopy any possibility of a foreign body.

My own first case of a foreign body was an easy one. A boy nine years old had been playing football. The ball fell several times in some weeds. When his playmate returned the ball, the youngster ran under it, evidently taking a deep inspiration at the time, as he said he neither saw nor even felt the burr in his mouth. He fell choking, gagging, and coughing, and

turned very blue. His father rushed with him to the nearest doctor, who recognized the emergency and sent him to me. By the time I saw him, about one hour after the accident, he was in fairly good condition, somewhat pale, his finger tips cyanosed, salivation very profuse, aphonia present. There was increased respiratory effort, though this was not marked. There was no supraclavicular nor epigastric retraction, always an indication for tracheotomy. An X-ray was made, which included the area from the level of the naso-pharynx to the tuber-ischii, or sufficient to take in the whole respiratory and G. I. tract. No information was given by the plate. The larynx was exposed by an adolescent Jackson laryngoscope, and blood-streaked, frothy mucous was seen coming from the larynx. With suction and light sponging the two prongs of a burr could be seen protruding upward from below the vocal cords. On deep inspiration the prongs pointed slightly obliquely to the left. The upper two-thirds of the burr was firmly grasped with a Matthews forceps, and the burr easily extracted. Time required, one and one-half minutes, no anesthetic. The boy coughed repeatedly, expectorated, and his color returned. Respiration was easier, though slightly croupy. He made an uneventful recovery, and was discharged some 48 hours later, in excellent condition except for a slight hoarseness. Inspection of his larynx two weeks later disclosed a normal structure. The problem in this case was the protection of the delicate structure of the larynx against the sharp points of the burr, which were pointing upward. This was taken care of by insinuating the forceps blades through the chink, grasping the burr and rotating carefully and slightly downward to the lateral plane, then withdrawing, allowing the side of the forceps blades to push aside the mucous membrane, the cords, etc., in the lateral diameter, utilizing the blades for skids.

In another case I found that frequent offender, the peanut. A baby fifteen months old was brought into Dr. Mangum's office with fever and a cough of more than two weeks' duration. The parents had not suspected a foreign body, but had been giving her medicine for a cold, the medicine obtained from their nearest doctor, who had not seen the child. Dr. Mangum obtained from the mother a history definitely establishing the fact that three weeks earlier while eating peanuts the child had begun to cry when refused more. She gagged and choked, but the mother paid no attention to the incident as the child appeared all right in a few moments. The coughing and wheezing were attributed to a cold made worse by a coincident change of weather. Dr. Bigler's X-ray of the child's chest showed a marked area of reaction in a part of the lobe of the right lung. A 4 mm. bronchoscope was inserted through an infant-size laryngoscope, without anesthesia. There was no marked reaction in the trachea, and upon entering the tube in the right bronchus, the end of a peanut was seen low down in a continuation of the right bronchus. There was decided congestion of the mucous membrane near the foreign body, and the large amount of secretion present required frequent use of the suction tube. A delicate side-curved forceps was insinuated into the lateral forceps spaces

which were available, in spite of this being a vegetable substance, and the peanut, which proved to be about one-half of a half peanut kernel, was extracted. Searching of the other bronchi was done as gently as possible. We found the left bronchus almost dry and practically normal, so concluded that the piece of nut already recovered was the answer to this particular case, and came out, with the idea of going back in about five days or a week if the condition did not clear up. Time, nine minutes, no anesthesia. Fortunately, there was no reaction, and the chest condition steadily and rapidly improved.

Another interesting case was that of a boy three years old who was brought into my office with good color, respiration about 24, and a slight cough about every five minutes. His father gave a history of the child's coughing, gagging, and falling unconscious while he had corn in his mouth, this about one hour before I saw him. When the father picked him up, he caught his breath and his color returned, but on the way in to town, a distance of about fifteen miles, he had choking spells and turned blue whenever he was moved about. Dr. Bigler X-rayed the youngster, and while he was in the X-ray room the boy was sent up to me, blue and limp. I turned him over on the table, intending to do a tracheotomy, when he breathed and his color soon returned. I did an immediate bronchoscopy. The grain of corn hit the end of my tube when it passed the sub-glottic space, and was re-inspired. I followed it up, and was able to locate the anterior-posterior forceps spaces as the kernel lay with the broad end up, just below the bifurcation in the right bronchus. I secured a firm hold with the forward-grasping forceps, bringing the kernel up against the tube mouth, fixing it there, and withdrawing the tube, forceps, and corn as one. The boy had a medium reaction, and I stood by ready to do a tracheotomy about eight hours later. This, however, was never required, though at the time it seemed imminent.

The peanut case represented probably the most frequent offender. The peanut has caused far more pathology in the respiratory tract than has ever been attributed to it. Vegetable substances are peculiar as foreign bodies in that they cause violent reaction in the mucous membrane of the respiratory tract, and they are non-opaque to the roentgen ray. The term arachadic bronchitis so frequently mentioned in the literature of the last few years, seems to give the peanut a prominence requiring it along with other vegetable substances to be ruled out in every chest condition. Metallic foreign bodies may give us a symptomless interval, tending to minimize a diagnosis of a foreign body, but metallic and denser objects are shown on an X-ray plate in most instances. In any doubtful case, "look and see." Always balance your physical, roentgen ray, and endoscopic findings with a careful history. Take nothing for granted. Jackson has said, "The internist can tap, look, and listen on the outside, the roentgenologist can look through, and the bronchoscopist can look inside the patient's lung."

Iglower suggested the mechanism by which foreign bodies produce emphysema, etc. Manges and Jackson with his co-workers have placed on a firm basis the X-ray and physical findings in cases of opaque or non-opaque substances. Any competent X-ray man can now make a diagnosis of a foreign body with astounding accuracy. The three-valve-action types which are met with—the bi-pass-valve, the stop-valve, the check-valve—serve us in interpreting findings. The consideration of just what may occur in a mechanical way with these types of valve action when a foreign body is inspired gives us the key to the interpretation of an X-ray plate, even though the foreign body may be non-opaque.

A copy of the clinic schedule of Drs. Clerf and Aucoin, at Jefferson Hospital, serves to illustrate the point that foreign body work is in the minority of all those conditions amenable to per-oral endoscopic procedure. I copied the following list, for one day in November, 1928: 9 bronchoscopies for lung suppuration, 1 aesophagoscopy for dysphagia, 1 laryngoscopy for papilloma larynx, 1 aesophagoscopy for aesophagoscopic boudinage.

When we stop to consider the number of cases of lung suppuration, abscesses, bronchiectasis, which are recognized, and the number of trachea-bronchial-tree conditions such as new growths, stenosis, etc., which have not been recognized except at post mortems, we cannot fail to be impressed with all that bronchoscopy has to offer in diagnosis and treatment. In the case of lung abscess or bronchiectasis, in addition to direct inspection through the tube of all fields which can be exposed to the eye, we have pneumonography, or instillation of opaque substances into the different parts of the trancheo-bronchial-tree to outline cavities or departure from normal. By aspirating these areas first, and then introducing lipoidal or bismuth subcarbonate through the bronchoscope, we have a definite method which yields accurate data for diagnosis. Then in treatment aspiration with the bronchoscope of abscesses or bronchiectatic cavities, at intervals of five to seven days, certainly is an unquestioned therapeutic measure. We have, then, an instrument by which we can see, take a culture or specimen, and be exact in gross appearance, bacteriology, of cavity contents, and pathology of tissue removed. It is quite worth while to know that we are dealing with a Vincent's infection in the lung, and to have the assurance that our culture came from the lung, and *not* from the tonsils or the area around the teeth. There is no guess-work about a diagnosis revealed when tissue is sectioned and studied by a competent pathologist. The bronchoscope enables us to secure biopsy in the lung or aesophagus. I believe that in the future there will be fewer cases of so-called post-operative pneumonia reported. Drs. W. E. Lee and Gabriel Tucker[2] have been reporting results and conclusions from their studies in post-operative pulmonary complications. They conclude that atelectasis predominates in pulmonary post-operative complications. X-ray and bronchoscopy of all chests showing signs after operative procedures will, I believe, soon become a common practice in this field. It has been demon-

strated that a bronchus can be occluded by a thick tenacious mucous plug, causing atelectasis in that area of the lung which the accluded bronchus aerates and drains, and after removal of the plug, the collapsed lung expands again. Portions of the thick secretion have been injected into the bronchi of dogs, causing typical collapse. Certainly no one can yet say that atelectasis is rare until we study the post-operative cases more carefully with the X-ray and the bronchoscope. This necessarily means early study, before the collapsed areas undergo extensive inflammatory changes.

In a case of lung abscess, a colored child, four years old, came in with a temperature of 103.4 and showing great emaciation, with a history of broncho-pneumonia following measles two months earlier. A diagnosis of tuberculosis had been made by the attending physicians. Dr. Bigler saw the child and advised X-ray, sputum examination, etc. She was brought in, and Dr. Bigler's X-ray picture, taken with the child in a sitting position, showed a definite shadow, with a suspicion of fluid level in the middle lobe of the right close near the trachea. Bronchoscopy without anesthesia revealed marked congestion and some granulation around the middle lobe spur. After a large amount of secretion had been aspirated, the granulations were crushed with side-curved forceps, and a Lynah tube inserted and a quantity of pus withdrawn. Staphylococcus was the predominating organism present. The child immediately began gaining in weight, and improved so rapidly that the mother came in two weeks later and said that the girl was getting well so fast that she would not bring her back for further study or treatment.

As to laryngoscopy, we can get an ideal exposure with the Jackson laryngoscope, and the ability to do that is, of course, the requisite initial step in bronchoscopy. We actually see the larynx as a true picture, with no reversals. In no other way can an infant's or a child's larynx be exposed to view. This method makes intubation a matter of ocular guidance. Cauterization of the larynx is easily done through a laryngoscope, laryngeal papilloma or the securing of a piece of a new growth for biopsy are readily taken care of in this way, and aspiration of the trachea is easily accomplished.

Contrary to common belief, it is easier as a rule to do a bronchoscopy than it is to do an aesophagoscopy. Chevalier Jackson says that the one place a tube will not go if inserted and pushed on blindly is into the aesophagus. It is easy to push through the aesophageal wall. The resistance offered by the pull of the cricopharyngeus muscle must be taken into account, and the tube made to follow the lumen under ocular guidance. There is another ever-present danger in doing aesophagoscopy—that of allowing the head to fall too low, and causing the end of the tube to press into the party wall or occlude the trachea. It is this possibility which makes aesophagoscopy under a general anesthetic dangerous. Foreign bodies of any kind or description can and do get into the aesophagus, when they are small enough to get into the lateral spaces or the pyraform

sinuses, and the fact that a patient can swallow does not necessarily exclude the possibility of a foreign body. X-ray in this instance with opaque mixtures or bismuth in a capsule is the great help in diagnosis. Blind probing for a foreign body in the aesophagus is very dangerous, and the time is now here when a bristle probing is outlawed. Any attempt to blindly dilate an aesophageal stricture is mentioned only to condemn it. The aesophagus is an important organ easily traumatized, and its proximity to the mediastinal spaces and to other important structures of the chest demand expert handling with care and judgment to prevent infection that can result fatally, or rupture which is nearly always fatal.

The aesophagoscope is indispensable in the diagnosis of strictures, new growths, ulcers, pouches, or dilations naevus, and many other lesions of the aesophagus. The Jackson clinic reports cases of typical peptic ulcer in the lower third of the thoracic aesophagus. One should never wait to do an aesophagoscopy, in the face of symptoms such as dysphagia or substernal pain which can not be explained. A diagnosis of a malignancy or of a premalignant condition is now possible.

In the past strictures of the aesophagus, particularly that large class of strictures caused by swallowing caustics, preseneted a gloomy prognosis. Those cases with atresia either died from starvation and anhydremia for lack of gastrostomy, or from attempts at blind manipulation in an effort to dilate, or the patient was sentenced for life to wear a gastrostomy tube and be fed that way. Trousseau's statement that "sooner or later all cases of stricture of the aesophagus die of the bougis," does not now hold good. Gabriel Tucker's method of retrograde boudinage,[3] simple in principle and efficient in use, is one of the milestones in surgical progress. Any case of stricture which does not have complete atresia can now be handled by careful and patient work. Even in the cases of complete atresia in the Jackson clinic they make an opening by the combined methods of aesophagoscopy per oral and through the gastrostomy opening under the guidance of a double plane flouroscope in addition to the eye. This method is not without danger, and Jackson warns against any such attempt without the assistance of double plane flouroscopy. Only one death has been reported in the Jackson clinic from this dangerous procedure.

No patient should be allowed to suffer the risk of blind probing or attempts at dilation. No patient should be allowed to approach starvation and anhydremia when a gastrostomy permits nutrition and water balance. Under ocular guidance, a large percentage of these cases can be cured with gentle and prolonged treatment with the aesophageal bougie. In cases of impending or complete atresia a string must be passed into the stomach from the mouth and brought out the gastrostomy wound, and then Tucker's retrograde method instituted. Briefly, the main points are to prevent atresia with the continuous string, to accomplish proper nutrition, including the saving of the saliva which is regurgitated and put into the stomach, and gradual, gentle, prolonged period of treatment. Adults readily swallow

the string at each treatment. Children present a more tedious problem, so the string is left in between dilations.

The close cooperation of the surgeon, the internist, the chest man, the pediatrician, the roentgenologist, and the endoscopist makes for ideal team work. No one of these in modern diagnosis and treatment is sufficient unto himself. The laryngologist is the logical man to assume this function of endoscopy and to carry on until the volume of work develops to the point where he can do this work alone. I venture to state from my own experience that the man who equips himself to do this work will find a very appreciative spirit of cooperation among his associates, provided that he himself is convinced and proceed to tell these associates just what he can do for them. Any man who has ever attended the clinics of Dr. Chevalier Jackson and his co-workers will certainly have two things happen to him. First, he will be convinced beyond any question of a doubt as to the actual need of per-oral endoscopy. Second, he will be enthused and inspired by the accomplishments of these clinics, and be given a new outlook in his field.

We often hear criticism of specialization. Hajek in a recent Sir Felix Simon Lecture before the Royal Academy was pessimistic, making the point that perhaps specialization and dependence upon laboratory and X-ray might depreciate our clinical ability. Without going into any detailed argument as to this point, I do state that results obtained today by properly cooperating staffs have never been equalled in the past. We have in per-oral endoscopy another aid in diagnosis and treatment which will be of assistance in our problems in direct proportion to the frequency of its use, providing that the roentgenologist, the internist, the surgeon, the pediatrician, and the endoscopist cooperate fully.

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DISCUSSION

Dr. J. W. MacConnell, (Davidson): I was just wondering if I did not bring to this state the first complete set of Jackson instruments which were brought into it, yet I myself do no endoscopy at all. I went to Pittsburgh and worked there a while with Dr. Jackson before he went to Philadelphia, and I bought a complete set of instruments. I have not enough work to do to keep it up. Perhaps you will say if I had done it well enough I would have had the patients. Of course, Dr. Jackson says it is as easy to put in an endoscope as to take out a tonsil, any time; and it may be for him but is not for us. It is not necessary for every laryngologist to do endoscopy, nor is it wise. It is well for one man in a district

to do endoscopy and the rest of us to send our patients to him. There need be no jealousy about it, because he will never get rich from it. Most of the patients come from the charity class. So let's combine and send these cases to that man. I am glad we have a good man in Kinston, one in Charlotte, Raleigh, etc.

Not all of us use Jackson's instruments; many men use other instruments. It is somewhat of a spectacular thing and usually gets into the public press. Taking an open safety pin out of the larynx, etc., usually gets into the papers and is looked upon as very spectacular, whereas if you took it out of another cavity it would not attract attention.

Dr. V. K. Hart, (Charlotte): As to the peanut, I think Dr. Peery was very fortunate in the outcome of his peanut cases. It is a well recognized fact that of all toxic conditions in the lung the peanut is the worst. I have seen a peanut removed in one minute, promptly, efficiently, and without trauma, and have seen that child receive the most up-to-date postoperative care, and yet the child died.

If I were asked what is the most important thing in endoscopy I would answer team work. It is most important. I have seen a patient's life hang in the balance, and without team work that patient would have died. I saw an instance not long ago. A child had gotten an end of a pencil into its lung. A bronchoscope was introduced, and the pencil was drawn up into the larynx. The child promptly stopped breathing, and a tracheotomy had to be done immediately. The pencil was pushed back down into the trachea and taken out through the tracheotomy opening. I think Dr. Jackson emphasizes that no one should attempt to do this work without trained assistants.

Dr. J. N. Robertson, (Fayetteville): Many of us in smaller towns who do eye, ear, nose, and throat work are often called on in these emergency cases, and probably all of us have done some of this work. We can not do the work very well because we do not have enough to do, but often the people have not the money to go off, and we get the case.

I should like to report two cases. One was a baby six months old. This child was playing on the floor, and the mother gave it a chicken bone. While sucking away at the chicken bone the child got strangled and lost its breath, as the mother described it. It was brought in very blue and cyanotic; it looked as though it could not make it. I examined the child with the bronchoscope and could not find anything except a very septic sore throat and follicular tonsils. So I referred the child to a pediatrician, thinking it might be diphtheria. While we were examining the swab, etc., the father rushed in the next day and brought a piece of rattle which the child had coughed up. That had been missed probably because of the swollen condition of the larynx.

In the next case the child had inspired a grain of corn. The child was in very bad condition, and I immediately did a tracheotomy, without anesthetic, which did not relieve it. I inserted a small-sized bronchoscope

and could not locate it. I then turned around to get another instrument, when the child coughed; and when I looked around the grain of corn was hanging in the opening.

Dr. Peery, closing the discussion: In reply to the doctor's suggestion about having one man in a section do all of this kind of work, I can not quite agree with him. As I remarked, this work is going to be done in every well equipped hospital. You can look down that tube and get a lot of information. You do not examine a man, as Gabriel Tucker says, through his coat any more. The point I am making is this—that possibly the smaller hospitals can not afford to have an endoscopist. His cases will not be numerous enough; the cost will be prohibitive, in other words. If the laryngologist does not do it, the internist and the chest man will do it.

If you go in one of Dr. Jackson's clinics you will be impressed with the volume of work they have. They run through twenty or twenty-five cases any time and get through with them and don't kill them. The inserting of an endoscope into a bronchus or the trachea is devoid of danger if done properly. They teach it to you at the Mayo Clinic and the Jackson Clinic and other places. They tell you it is absolutely devoid of danger and to go out and do it.

As to Dr. Hart's case, I wonder if that child died for lack of a tracheotomy. Vegetable substances produce a violent reaction in the respiratory tract. I remember one child that came in with a slight wheeze, and in less than fifteen minutes the wheeze could be heard clear across the room. I did not dare leave that baby for forty-eight hours; I was afraid I would have to do a tracheotomy. And you are not through with those cases when you do the tracheotomy. These vegetable substances produce violent irritation.

If a thing goes in through the larynx, it can be recovered through the larynx. This is no criticism of Dr. Hart, but that pencil should have been recovered through the larynx. Someone should have taken a manikin and duplicated the pencil and worked with it until he knew how to get out that pencil.

This work is not impossible; it is practical and safe.

RETINOBLASTOMA (GLIOMA OF THE RETINA), WITH REPORT OF CASES AND LANTERN SLIDES

By Frank C. Smith, M.D., Charlotte

While this disease is rare, occurring once in ten thousand cases, it must not infrequently be considered as a possibility in certain chronic inflammatory conditions, when a mistaken diagnosis means the life of the patient. Certainly a bilateral intraocular neoplasm with useful vision remaining in one eye presents a frightful problem to both the physician and the parents. Such an experience leads me to report two cases seen with Dr. H. L. Sloan and another followed at the Wills Hospital.

Glioma is a misnomer, as true gliomata are essentially benign, being fatal only because of their proximity to vital structures, while these intraocular growths are highly malignant. They follow the clinical course of intraocular sarcomata, i.e., preglaucomatous, glaucomatous, extraocular and metastatic. Fuchs says that an intraocular malignant neoplasm will in all probability have to be regarded as a glioma in a child and a sarcoma in an adult. This seems strange, as sarcomata are found in other structures in children, but probably accounts for only 21 intraocular sarcomata under the age of twelve appearing in the literature before 1926. During this year Parker, Stokes and Warthin reported ten of these growths as sarcomata after being unable to demonstrate ganglion or glial cells by special staining methods. Parker stated that from the standpoint of a disgruntled clinician he was unwilling to call the primary growth a glioma and have the metastasis frequently reported as a sarcoma. To end the confusion of names arising from differing opinions as to their point of origin, the American Ophthalmological Society in the same year adopted the name "retinoblastoma" for all such malignant growths.

This is a peculiar malignancy. Why should it be limited to childhood? No case has been reported over 16 years of age, while 50 per cent occur under two and 94 per cent under four.

The Grover family indicates that it is hereditary. Mr. Grover had an intraocular glioma removed when he was five years old. He had two children, a son and a daughter. The son died at the age of three, following the removal of a similar growth. The daughter did not have the disease, but four of her eight children did. In another instance, eight out of eight children were so affected. It is certainly congenital in 10 per cent and probably always is.

Both eyes are involved in 20 per cent of the cases. As the growth in the second eye develops independently, and not by extension through the chiasm or as a metastasis, permanent cures have resulted after bilateral enucleation.

Intraocular metastases, rare in sarcoma, occur frequently in glioma when small fragments, breaking off the neoplasm, are transplanted in another place within the eye. General metastases are uncommon until the growth has extended beyond the eyeball, thus comparing favorably with sarcoma. However, an extension through the optic nerve often occurs early.

The disease usually runs a course of several years. While intraocular it advances slowly, but once outside the sclera there is a wild proliferation of cells forming rapidly a bleeding, spongy mass. M. J. Keys reports a recurrence which, in spite of heroic radiation, had filled the orbit, protruded above the supraorbital margin, covered the nose and extended below to the level of the mouth within six months after exenteration.

When we consider that the disease occurs only in young children with no early symptom except the peculiar reflex from the pupil or possibly the detection of failing monoculear vision, it is not surprising that few

diagnoses are made until the stage of secondary glaucoma is reached. Even then there may already be extensions into the nerve. As the growth progresses the lens and iris with the pupil dilating are often pushed forward and the sclera and cornea, easily distensible in the young, are stretched as from the increased tension of buphthalmos. Continued pressure ruptures the sclera with the growth extending into the orbital tissues usually at the corneoscleral margin or near the optic nerve, to be followed by early metastasis and death.

The space given to pseudoglioma in the text books is an indication of the difficulty frequently experienced in making a diagnosis. Merely keeping glioma in mind when a whitish or yellowish reflex is detected in the pupil of a child would probably cause accurate diagnoses more often, as three of the cases I have seen had consulted an eye, ear, nose and throat physician months previously and been told it was a cataract that should be left alone. Frequently, however, after utmost care there is still uncertainty. "Some years ago Mr. St. Claire Roberts presented to a meeting of the Midland Ophthalmological Society held at Dudley three cases for diagnosis, three children suffering from a condition of the eye which might have been glioma or pseudoglioma; let us call them A, B, and C. The members of the society were practically unanimous that A was a glioma, B was certainly a pseudoglioma, and that C was a doubtful case. All were enucleated: A was an innocent inflammatory condition, B was a glioma, and C was a glioma. This episode shows the great difficulty in coming to a conclusion."

Unfortunately a diagnosis is rarely made in the beginning of the disease when only several small nodes resembling a tuberculous choroiditis or simply a thickened area of the retina can be detected. Usually when first seen the mass has developed to the point that it appears as a solid detachment, pinkish yellow in color, with a smooth or lobulated surface over which the retinal vessels course, possibly obscured in areas where they are embedded in the growth. Recent detachments may be seen around the tumor or there may be complete detachment with the growth hidden in its folds. The mass often increases in size for months before there is an increase in tension, as will be seen in case one.

Transillumination when positive is, of course, valuable, but when negative is of no value as the growth is often situated near the posterior pole.

Metastatic ophthalmia, abscess of the vitreous, tuberculous disease, unabsorbed tissue at the posterior lens capsule, retinal detachment, leucosarcoma and several other rare conditions may be mistaken for glioma.

The common condition to be differentiated is some chronic inflammatory process of the choroid or ciliary body which has usually followed meningitis or some acute infectious disease; therefore the history is most important. There is nothing characteristic about the reflex and often the appearance of the mass is of no help but the presence of an iridoclytis, past or present, with a persistently lowered tension is strong evidence

that the condition is inflammatory. However, it must be remembered that glioma occasionally presents precisely these symptoms with a secondary rise in tension later.

In the light of present day knowledge doubt should demand an immediate enucleation as these pseudogliomata are practically always sightless and will be removed later when the eye becomes irritable or shrinks.

Secondary gliomatous extension to the iris may be in the form of discrete nodules resembling a tuberculous iritis, sometimes presenting a descemetitis or a pseudohypopyon formed of the tumor elements.

With a child under an anesthetic, which is often necessary for a thorough examination, small particles of the tumor may be detected floating in the vitreous, a sign which some consider almost pathognomonic of the condition.

At the present time no one skilled in the use of the slit lamp has examined a sufficient number of gliomas for the delicate signs of inflammation detected by this instrument to be of final value.

Positive diagnoses of intraocular neoplasms have been made from the cells in the fluid obtained from the region of the growth by puncturing with a hypodermic needle as in case one.

Prognosis on the whole is bad, being favorable only when the operation is done promptly before the growth has extended beyond the retina. 50 per cent of cases so treated are cured, while 10 per cent seems a just estimate of cures taking all cases. (Hirachberg 6.5 per cent; Vossius 10 per cent; Wintersteiner 13.7 per cent.)

In spite of the fact that involvement of the optic nerve is considered fatal by some of the best authorities cures of four such cases reported by De Kleijn should prevent despair.

The treatment is prompt enucleation with care being taken to section the nerve as far back as possible followed routinely by radiation when glioma is present. When bilateral each eye should be so treated. If there has been extension beyond the sclera, exenteration including the whole periosteum is immediately indicated with prompt radiation.

Verhoeff cites two cases which were apparently radiated with success and reports a case himself in which six months after removing one eye the other was similarly affected. Immediate X-ray therapy of this eye was begun. There was intraocular metastasis but no nerve involvement as the vision was perfect after three and a half years. Such reports are encouraging that radiation may do good where it is indicated, i.e., as a preventative for post-operative recurrences and where operations are refused.

Spontaneous cures do occasionally take place, being found usually in shrunken eyes. Dr. Richard Gamble reported five such cases which he found in the literature covering a ten year period.

From the clinician's standpoint certain facts regarding the cellular pathology are interesting and practical. The rosettes of Wintersteiner

stressed as being characteristic are found in less than one-third of the cases and when found are in the newer parts of the growth, the older parts resembling an angiosarcoma. This latter fact accounts for the report of angiosarcoma in Parker's cases and in one case here reported. Furthermore, a pseudoglioma may be reported as a true glioma when the folds of the retina caught in a fibrous tissue mass form false rosettes. This error in case three is easily understood when we consider Treacher Collins' statement, "That a microscopic specimen of a foetal retina at three months with the layers undifferentiated, is such that if shown to a pathologist it would be pronounced glioma." The infection in this case occurred in utero.

CONCLUSIONS

1. Bilateral glioma can be cured.
2. Cases with involvement of the nerve have been reported cured.
3. The intraocular tension remains normal until the tumor is well advanced.
4. Microscopically a glioma may be called a sarcoma or a pseudoglioma may be called a true glioma.
5. The treatment is early enucleation plus X-ray or radium.

Case No. 1. S. G., White, male, age 2 years 8 months. 11/19/28.

Diagnosis: Glioma, bilateral.

History: Father and mother both well with no history of glioma. Two sisters, 5 yrs., and 6 mos., both healthy. Normal birth. Unexplained convulsion at 8 mos. Whooping cough at 16 mos. during the course of which the left eye turned in and has remained so. Otherwise always well.

The first symptom of the present trouble, was a whiteness of the left pupil which the parents noticed over a year ago. The child was taken to a physician at this time who assured the father there was no trouble. In September he consulted a specialist, but failed to tell him of the reflex. This morning he was taken to Dr. Elliott, of Lincolnton, who diagnosed an intraocular tumor. At no time has there been any pain.

Examination: A well nourished child who appears comfortable. As he looks straight ahead there is a whitish reflex emenating from the pupil of the left eye while the right eye turns definitely upward.

O. D. External examination is negative; cornea clear; pupil 2½ mm., round and reacts readily. Prompt dilation with atropine. Tension normal (finger). The lens and vitreous are clear. There is a detachment of the retina occupying the greater portion of the inferior temporal quadrant. The portion extending toward the disc appears as a recent detachment while the portion peripherally is pinkish yellow with a smooth rounded surface over which the retinal vessels, obscured in areas, course in fairly straight lines. The yellowish reflex was detected only when this eye was directed downward. Transillumination positive.

O. S. Conjunctiva injected. Pupil dilated (atropine). Emenating from the pupil there is a greenish white reflex. A yellowish white mass occupies the whole posterior part of the fundus. Internal strabismus, 20 degrees. Tension elevated (finger).

Impression of Dr. Sloan and myself that there was a bilateral intraocular glioma. We advised bilateral enucleation to save the child's life, and asked for a consultation. Permission was granted for an enucleation of the left eye.

11/20/28. Under ether a simple enucleation of the left eye was done. Nearly ½ inch of the nerve was sectioned. There was no evidence of extension without the globe.

Pathologist's Report: "Left eye (tumor).

Gross: This section upon midsection is seen to consist of a neoplastic growth arising from the posterior pole and advancing forward, filling nearly ½ of the posterior chamber.

Microscopic: Cell type—large, polyhedral, arranged in units about small blood vessels—one centrally located in each unit. Small amount of pigment seen. None of the usual typical cell type and architecture of glioma. Section across the optic nerve after it has left the sclera shows that it also is involved with the neoplastic growth showing central and peripheral neoplastic extension.

Diagnosis: This is a nonpigmented melanoma (melano-sarcoma) of the choroid. It has also been called a perithelioma and an angiosarcoma on account of its relationship to the vessels."—(L. C. Todd)

Exenteration of the orbit was advised and refused.

1/16/29: The socket healed promptly and appears healthy. Radium was used immediately following the operation and has been continued in O. D. as well as O. S.

O. D., there has been some increase in the size of the growth, together with increased detachment.

The examination of the patient's two sisters showed the retina normal.

2/7/29: Father states that the child suddenly, five days ago, began to have trouble getting around except in the best light. Atropine. The retina is completely detached except in the midline above and over the tumor mass. With oblique illumination the retina appears yellowish white with disseminated, discrete, denser areas scattered throughout. In places the vessels are obscured; this is marked along the course of a vessel running up and in. Along its course on either side is a dense white line almost the width of the vessel which for several mm. meets over the vessel, completely hiding it. Over the tumor mass there is a warm pinkish yellow reflex.

Enucleation of the right eye advised, with exenteration of the left.

2/22/29: O. D. Under ethyl chloride, tension: 1:20; 2:18; 3:21 (Schiotz). The tension has always seemed normal to the finger. Eye appears the same.

2/27/29: Eye began to pain 48 hours ago. Tension—60 (Schiotz). Ether. Simple enucleation with section of the nerve between ¼ and ½ inch.

Before this eye was enucleated, fluid was obtained from the anterior chamber and the subretinal space through a 25 gauge hypodermic needle. The iris was traumatized in making the puncture which, of course, caused some blood in the specimen.

The report of Dr. L. C. Todd is as follows: "Direct examination of the aqueous humor before enucleation showed no malignant cells. Direct examination of fluid from between the detached retina and choroid shows one large clump of granular polyhedral cells with large hyperchromatic nuclei."

It seems that such unclassified cells would point to malignancy.

3/21/29: Dr. Algernon B. Reese reported the section of the left eye sent to him as glioma.

4/4/29: The tissues of the right eye have healed. There is no evidence of a recurrence in the left.

Case No. 2. G. E. N. Age 17 months. White. 3/10/23.

Diagnosis: Glioma O. D. Recurrence after exenteration.

Vision: Too young.

History: Six months ago (Sept. 1922) the mother noticed that O. D. had changed from a blue to a brown color. Oct., 1922 she noticed that the pupillary area

was whitish or yellowish. The child was taken to an eye, ear, nose and throat specialist who made the diagnosis of cataract and advised letting it alone. Feb. 11, 1923 the child had measles, at which time the mother noticed that the eye was more prominent than usual. This proptosis has steadily increased.

There was no history indicating intracranial involvement.

O. D. The lids are slightly swollen, reddened and are tensely stretched. The lacrimal sac is apparently clear. The globe is markedly proptosed. The cornea is larger than normal, with beginning keratitis e'Lagophthalmo; the child being unable to completely close the eye. The anterior is shallower than normal but relatively deep considering the tension which is stony hard. The iris is widely dilated and immobile. On oblique illumination a yellow mass can be distinguished posterior to the lens.

The proptosed eye with a yellow reflex emenating through the widely dilated pupil made a striking picture even from a distance.

O. S. The external examination was negative.

Fundus: An examination under ether (3/16/23) showed no evidence of glioma.

3/16/23: Operation: Enucleation followed immediately by exenteration of the complete contents of the orbit.

There was an adherent mass which filled the posterior part of the orbit and apparently extended through the fissure.

3/18/23: Slight reaction, wound fairly clean.

3/29/23: Radium needles inserted for 12 hours. No reaction followed.

4/10/23: Discharge considerable since the first four days following operation.

4/14/23: Discharged from the hospital with the orbit filling in and much less drainage.

7/8/23: Yesterday when the mother handed the child a piece of bread he groped for it. This was the first indication that there was trouble with the vision of the remaining eye. There is no evidence of a growth in this eye. (Examination not very satisfactory). The child is apparently blind. Tension normal. Pupil reacts to light. Media clear, questionable veiling of the nasal side with temporal pallor.

7/23/23: Readmitted to the house. Swelling over the zygoma. Lids separated by the tumor protruding from the orbit.

Fundus O. S. shows increased veiling of the nasal half of the disc with increased general pallor.

The child is drowsy most of the time; during waking spells he is quite restless and irritable.

8/3/23: Marked swelling of the right side of the face, the skin being tense over the zygoma and maxilla. The eyelids are forced apart by the tumor mass which extends over 1 cm. beyond the level of the superior orbital margin. The orbital ridge is not palpable, due to the extent of the indurated swelling. There is a slight edema of the lids of the opposite side. The growth at the right inner canthus pushes the nose well over to the left. The angle of the mouth on this side is pushed downward. Parotid and perauricular glands are enlarged. The superficial veins of the right side of the face are engorged. Slight swelling of the right side of the neck. In this condition the child was discharged, listless and very emaciated.

8/22/23: Death.

Pathological report was glioma.

Case No. 3. E. J. P. Age 6 weeks. 8/8/28.

Diagnosis: Pseudoglioma.

History: Mother states that there has always been a difference in the color of the two eyes since birth. A week ago she noticed that the eye looked queer and she thought the baby could not see with it.

Examination: O. D. There is slight injection of the conjuctiva. The anterior chamber is shallow and the pupil bound down. There is a yellowish reflex from the pupil. The tension is lowered (finger).

With oblique illumination there is a smooth white mass just behind the lens, with apparently some newly formed blood vessels appearing on its surface temporarily.

O. S. is normal.

Our impression was that we were dealing with a pseudoglioma, but with a sightless eye with a possibility of malignancy, an enucleation was advised, asking at the same time for a consultation. Dr. Emory Hill after examining the patient, agreed with our diagnosis and advice.

8/17/28: A simple enucleation of the right eye was done. Ether. On sectioning the eye a white mass extended from ciliary body to ciliary body just behind the lens. Microscopically a typical form of pseudoglioma.

8/21/28: The pathological report was "Glioma of the retina."

Radium was immediately used.

3/21/29: Dr. Algernon B. Reese of New York gave the following pathological report: "This is a portion of pseudoglioma showing pseudorosettes which might be confused with real rosettes. These are unquestionably due to cross sections of the folded retina."

4/4/29: The socket healed promptly and has remained so.

This case is reported for the sole purpose of demonstrating that a pseudoglioma may be mistaken for a genuine glioma even microscopically.

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DISCUSSION

Dr. V. M. Hicks, (Raleigh): It is the sort of thing we have to keep constantly in mind. In one case which I had several years ago I made the diagnosis of glioma of the retina, and upon examination I found it was a congenital sac running from the canal forward to the lens. As you know, it occurs in the blood supply of the lens coming from the posterior surface of the globe. In this instance complete destruction of the canal had not

occurred, and a sac surrounded the entire posterior portion of the lens, with new blood vessel formation, etc., giving to the child glaucoma with painful blind eye, which of course justified the enucleation I had done. I think we might keep that in mind in these cases, that one of the definite indications for enucleation is a painful blind eye. We certainly want to avoid metastasis in these cases, and it seems to me we shall not go wrong if we remember that we are justified in removing a painful blind eye and thus avoid metastatic growths, which are, as you know, fatal.

REPORT OF COMMITTEE ON TONSIL-ADENOID CLINICS

Dr. V. M. Hicks made the following report:

The committee is composed of Drs. R. L. Daniels and J. P. Matheson and myself. We asked at the Wilmington meeting that the committee be discharged, but you did not discharge us. It is the sense of the committee that the tonsil and adenoid clinics as conducted by the State Board of Health be dispensed with. That decision has not come because of any personal animosity or anything of the sort but because so much criticism has come to the committee from various sections of the state from various men. It seems that the clinics are not meeting with the approval of the members of this section, and for that reason we make this report. We ask again that the committee be discharged.

On motion of Dr. McPherson, the report was accepted.

Dr. Daniels offered the following resolution and moved its adoption:

Resolved: That the Section on Eye, Ear, Nose, and Throat of the Medical Society of the State of North Carolina go on record as disapproving any further tonsil and adenoid clinics as conducted through or by the State Board of Health.

The motion was seconded by Dr. J. G. Murphy and others, and, after discussion by Drs. John W. MacConnell, L. L. Simmons, J. S. Mitchiner, and V. M. Hicks, was carried without a dissenting vote.

Dr. Louis N. West offered the following resolution and moved its adoption:

Resolved: That it is the sense of the Section on Eye, Ear, Nose, and Throat of the Medical Society of the State of North Carolina that the eye clinics conducted by the State Board of Health be discontinued.

The motion received several seconds and was carried.

Dr. O. C. Daniels moved that a copy of these resolutions be sent to the Secretary of the State Medical Society and a copy to the Secretary of the State Board of Health, which motion was seconded and carried.

The following officers were elected:

Dr. V. M. Hicks, Raleigh, as nominee for chairman of the section (this nomination subject to approval by the president of the Society).

Dr. V. K. Hart, Charlotte, secretary of section.

SECTION ON PEDIATRICS

Dr. L. W. Elias, Chairman, Asheville

WEDNESDAY AFTERNOON SESSION, APRIL 17, 1929

The Section on Pediatrics of the Medical Society of the State of North Carolina convened in the City Court Room, City Hall, Greensboro, North Carolina, at 2:25 o'clock, the Chairman, Dr. L. W. Elias, of Asheville, presiding.

Chairman Elias: The meeting will come to order.

In looking over the field of medicine for a subject to write a paper for this Section, I was astonished to find what is probably familiar to the rest of you, that North Carolina had the enormous death rate among infants that it has. It seemed so important that rather than confine it to the Chairman's Address, I decided, with the advice of some of the men, to make a symposium out of this very important subject, to see if we couldn't find out wherein lay the trouble and, therefore, the means for righting it. With that in view, we are opening the meeting this afternoon with a symposium on the high death rate among infants in the great State of North Carolina.

As first on the program this afternoon, we have a paper on "Infant Mortality from Industrial Standpoint," by Dr. LeRoy J. Butler, of Winston-Salem.

INFANT MORTALITY FROM INDUSTRIAL STANDPOINT

By Leroy J. Butler, M.D., Winston-Salem

The question of how we may reduce our infant mortality is one that has given us pediatricians much thought and anxiety for the past few years, for we know that North Carolina has one of the highest infant mortality rates in the country. In 1927 only three other states had higher mortality rates in the registration area. We know that our negro population increases our mortality rate because the infant negro death rate is about twice that of the whites. This is offered as an explanation, not as an excuse, because several Southern states with a large negro population have a lower mortality rate.

This is a subject which may be discussed from many angles. The few remarks that I shall present will be, "In What Way May We Reduce Our Mortality in an Industrial Center?"

In my own city of Winston-Salem we have a population of between 80 and 85,000 people with colored population of from 32 to 35,000.

Our infant mortality rate last year was 108, that is, 108 babies out of 1,000 live births died in the first year. The white infant mortality is 78, the colored being 162, or over twice as high as the white. We feel, therefore, that the colored population is our big problem.

Now the question is how to approach this problem? We have an excellent City Health Department, composed of a health officer, 2 school physicians, and 15 nurses, 12 white and 3 colored. We have four baby clinics weekly, two for white and two for colored. We have a most efficient sanitary department, we have a free milk and and ice fund sponsored by our local newspaper, and our milk and water supply is good, but notwithstanding these facts our infant mortality rate is high. However, we do feel encouraged, due to the fact that our infant death rate has dropped from 138 in 1923 to 108 in 1928.

Now what are some of the problems which confront us?

I would first mention the education of the mothers in regard to the proper care and feeding of their babies; so much of the improper feeding is due to ignorance on the part of the mother. Most of our mothers are anxious to give the baby the proper care if they only knew how, so it is up to us and our health departments to see that as far as possible the mothers get this information. Our health departments are doing a wonderful work in this respect by their pamphlets sent the mother at the time of the registration of birth certificate, the health talks and advice given through the medium of the newspapers, their school nurses, school physicians, and so forth, and it is up to us to encourage and help them as much as possible.

Another method of reducing our infant mortality is to teach the importance of breast feeding. Despite the great improvement which has been made in artificial feeding in recent years it is not easy to produce a baby by artificial feeding that can equal a baby which is the product of successful breast feeding. Many mothers and unfortunately some doctors apparently do not realize the importance of breast feeding, especially during the first few weeks and there is a tendency to deprive the baby of this advantage on insufficient grounds. We know that a large percentage of our mothers can nurse their babies, certainly for a few months, but notwithstanding this it is surprising the number of artificially fed babies we have.

In an industrial center so many of our mothers feel that they have to go back to work as soon as possible after the birth of the baby, sometimes from an economic standpoint, at other times from a desire to increase the family budget. In so many of these cases the economic factor is a minor one. Consequently the baby is weaned, put on a formula, very often obtained from some kind and solicitous neighbor, which has only a few of the essentials of a successful artificial feeding. These are some of the types of cases that we must educate to the importance of breast feeding.

The economic situation has probably played a big part in our increased infant mortality rate. Probably many babies have died due to improper

or inadequate diet on account of the financial straits of the family, but I doubt if this is such an exciting factor as formerly. With our various charitable organizations now in existence it is rather rare to find this condition causing much of our infant death rate. In my town we have an Associated Charities which will take care of any destitute family, supply them with clothes, food and fuel. We have a milk and ice fund that supplies free milk and ice to infant or children of impoverished families. We have a city physician who is on call at any time for medical treatment of these cases, and an out-patient department where they may go for diagnosis and treatment, and a city hospital which is always open to care and treatment of any child who needs hospitalization, so with these agencies or organizations functioning I doubt if the condition here plays as important a part in the high infant mortality as formerly believed.

In an industrial center the good that may be accomplished through the medium of well baby stations is, I think, one of the greatest factors in reducing infant mortality. In these clinics we have a wonderful opportunity of instructing the mothers in the care of babies. They are taught how to feed the baby, how often, and what to feed them, they are taught how they should be dressed, when to have them immunized against contagious diseases, they are taught how much the normal baby should weigh at different ages, how much they should gain, the developments of the normal baby and the indication for consulting their own physician. It is rather discouraging at times, however, to note the lack of interest and attendance at these clinics and one of our greatest problems is how to get more mothers to attend them. We must have good men in charge of these stations, the mother must feel that she is repaid for the time spent in attending and I am sure we will have better attendance and consequently a lower mortality rate. In our clinics in Winston-Salem there were registered 1,100 in 1927 and 1,600 in 1928. And so far as our records show only five of these have died.

Another factor which I think would help us solve this condition would be the establishment of Day Nurseries for the care of babies of working mothers. Especially is this true among the colored mothers. My observation has been that so often the baby is left with an older child or some old person, unable to work, who hasn't the least conception of sanitation or who knows nothing of the preparation of feedings or formulas. Consequently the baby becomes sick from infected milk or lack of care due to ignorance on the part of the so-called nurse. So many of our sick babies come to the out-patient department and to the hospital from just such places. I feel that if we had these nurseries, conveniently located so that the mothers could leave their babies on the way to work, milk and food being prepared and served by a competent nurse at a nominal charge, that it would be a means of contributing to the lowering of our infant mortality.

This subject which has been selected for me is one that covers a wide field and many other suggestions as to how we might lower our infant

death rate might be made. I think that our health departments could make numerous suggestions which would help us in trying to solve this problem. But I feel, as Dr. Elias, that this is an alarming condition which each and every one of us should seriously consider, and let us hope that the mortality rate in our state may be considerably reduced in the near future.

CHAIRMAN ELIAS: Rather than have the symposium of the individual papers discussed by the doctors following each reading, we will have all the papers and the discussion at the end.

The next paper on the program is "Infant Mortality as Affected by Economic and Illiterate Conditions," by Dr. H. H. Harrison, of Asheville.

INFANT MORTALITY AS AFFECTED BY ECONOMIC AND ILLITERATE CONDITIONS

By DR. H. H. HARRISON, Asheville

The fact that the United States stands seventh on the list of countries arranged in their rank as to infant mortality (under 1 year) is certainly surprising, and stands as a challenge to doctors and public health administrators of our country. Dr. Geo. Vincent, President of the Rockefeller Foundation, says "Infant mortality is the most sensitive index we have to social welfare," and also "Public health is a perfectly purchasable commodity." Such countries as Sweden, Denmark, Austria, Norway and Switzerland stand ahead of *us*—countries that I think *any* of us look upon in a general way as being distinctly inferior, certainly in wealth and social status—as well as in medicine, and yet they surely outstrip us in *infant care.*

Our figure the country over is about 65 under one year of age per thousand, whereas New Zealand, which stands at the top of the list, is only 43.

To go further, the South is a good deal behind the *rest* of the country. And when we compare North Carolina with the other Southern states where does *she* stand? At the very bottom of the list. Of course these figures are necessarily taken from the states having the vital statistics law, thirty-six of them now, though many Southern states are among those still out, and it may be that North Carolina is not the very *worst,* but she is certainly *bad.* Another explanation, this data is taken from towns the country over of 10,000 or more inhabitants, so is not a perfect report, but doubtless rural conditions are even worse.

Of the thirteen towns of North Carolina over 10,000, High Point has the lowest with 79, then in order come Salisbury 86, Charlotte 88, Goldsboro 94, Raleigh 96, Durham 97, Greensboro 102, Gastonia 103, Rocky Mount 107, Asheville 112, Winston-Salem 122, Wilson 137, and lastly New Bern with 199 babies dying under a year out of every thousand. The difference between the highest and lowest is very striking and looks

as though there surely must be an error. This gives North Carolina towns an average of 110, whereas the other cities of the South in the vital statistics area have only 90. Now *how is it* that we have this *tremendous* difference? It is certainly up to us to inquire *most earnestly* into this problem.

It is well established that ignorance and poverty are tremendous factors, but is America poorer or more ignorant than the little countries I have mentioned? The South may be poorer and more illiterate than the North, but I am perfectly sure that our own State is not poorer than any other state in the South for she ranks quite well in per capita wealth, not only of the South but of all the Union. So there is some other factor or factors that we must consider. But there is certainly *something* badly wrong with North Carolina—"there is something dead up the branch"—unless these figures are incorrect.

I have obtained them from several sources, and have gone back for some years previous to 1927, and these same general conditions obtain.

Now every one knows that poverty is a large element in mortality, we have figures which you all doubtless have seen, showing how as the family income goes down the child mortality goes up, and also where the smaller the house per person, the higher the death rate, both being simply measures of poverty. From our personal experience, every one here knows that sickness and poverty are closely related. But North Carolina is by no means the poorest State in the South.

In illiteracy America stands far down the list. "America, the richest country in the world, is among the most illiterate. Six out of every hundred Americans over ten years of age are unable to read and write their names." And of the 48 states, North Carolina stands near the bottom, being 41st, and this doubtless is a big factor with us. But is this the *only* one, and if we stood higher in literacy would we take our rightful place in infant mortality? At any rate, we must improve it—and doubtless we are improving it in this respect.

But to digress for a few moments may I mention a few other points that may enter into this problem? Is it possible that the large number of women being employed in our industrial establishments both during pregnancy and during the nursing period, is making its bad effects felt in our infant mortality? It has been found that this will about double the mortality in their infants even after allowance is made for the necessary bottle feeding. This generally leaves the baby with a grandmother or a negro nurse. I believe we should have laws prohibiting this in our State.

Other points that may be mentioned are the large families of the South. As we know, North Carolina excels in these and figures show mortality is greater under these circumstances. Rapid child bearing is certainly a potent element. Early marriage, which is also very prevalent in North Carolina, doubtless plays its part—for how very often do we see an

immature girl pretending to be a mother, with little judgment and less realization of her responsibility. And we have data as to their higher infant mortality also.

To digress further it is interesting to note that deaths from communicable disease are two to three times higher in bottle than in breast-fed infants. In causes of death peculiar to early infancy it is said to be *six times higher* in the bottle fed. In deaths from respiratory disease it is said to be nearly *two times higher*. And it seems to be an established fact that broncho-pneumonia is rarely ever seen in a breast fed baby. So it is proven again that there is a good deal in breast milk besides food, and *we must not forget it*.

Another question that should be mentioned is divorce. Whether North Carolina exceeds in this I could not find out, but at any rate she is good.

Then the question of general health conditions of the State and the hygienic practices of our people and the health education propaganda that is carried on by our very efficient State Board of Health. I know North Carolina stands near the top in these. Too, it is interesting to note that the average native white baby has a mortality of 94, the foreigners' baby 180 to 200, the negro 154, and the Jew but 53.

But speaking of hygiene—very pernicious practices are still carried on by grandmothers, midwives, and old colored mammies. For example, giving young babies uncooked fat meat to suck, chewing food and then putting it in the baby's mouth for him to swallow; and the giving of all sorts of teas, concoctions and patent medicines. These not only do the baby harm but they put off sending for some one whom I hope is more efficient. We need to educate our citizens above having their sick babies attended by old women.

And a most pernicious habit among mothers of a little better social strata is leaving babies almost entirely through the day with ignorant and often dirty negro nurses, the mother hardly seeing the baby the whole day except for the absolute necessity of feeding it to relieve her breasts. She is too busy with her own pastimes.

We also need more prenatal care of our country women. This greatly lessens the number of prematures, the cases of eclampsia, nephritis, and the necessity of bottle feeding. This is best obtained, it seems to me, by educating the layman to its necessity.

Our average general practitioner is not interested in babies and the younger the baby the truer this is. He cares for them simply because he has to in order to hold the family. He is not proficient in their ills; he does not examine them as he should; and he is not prompt in his ministrations. He does not know the absolute requisite of food and water for all babies at all times—whether sick or well, and he feels that the baby needs no supervision from him unless it is sick.

In conclusion—we have seen that North Carolina stands well from a general economic standpoint, that she stands very low from a literacy standpoint, both of which are predominating factors in general infant

mortality, and finds us in better than an average place—but finds us still far at sea as to why North Carolina makes such a poor showing with her babies in the first year.

This is an intricate problem, and a disgraceful state of affairs and one that cries out to North Carolina doctors for careful thought and study.

PEDIATRIC CLINICS

By Aldert Smedes Root, M.D.

In 1927 the highest mortality rate of infants under 1 year of age of the respective States was accredited to Arizona—125.8 per 1,000 births. The honor of possessing the lowest fell to Oregon—47.5 per 1,000, while the average for the States at large was 64.3 per 1,000. North Carolina's record for the year was 78.2—the fourth from the top.

Many factors enter into the computation of mortality rates for a given area. One must consider (1) the relative birth rate in this area, (2) the per capita poverty, (3) the efficiency of local health departments, (4) the relative activity of the midwife and her supervision by health agencies, and (5) the efficiency of the State's vital statistic reports.

The relative birth rate in North Carolina was the highest of all the States in 1927. This rate was 28.8 per 1,000 population, as against an average 20.4 for the whole country—a difference of 8.4 per 1,000. Unquestionably this factor accounts for a part of our seemingly high death rate.

Per Capita Poverty. No factor stimulates the death rate as does poverty. In studying figures from the Bureau of the Census, however, the total revenue receipts by the Government per capita in 1927 were for North Carolina $12.87, for South Carolina they were $9.38, for Georgia $8.20, for Kentucky $11.24, for Tennessee $10.22, for Alabama $7.92, for Mississippi $9.54, for Louisiana $10.58. The per capita wealth for North Carolina evidently was greater than these other seven Southern states who boast of a lower death rate among their infants. The financial condition of our people therefore probably plays no part in our high death rate.

Local health departments play an important role in preventive pediatrics. The milk supervision by them is of the utmost importance. The spread of communicable diseases is prevented; immunization against diphtheria is undertaken in thousands of children, as is vaccination against smallpox and sanitation in the home preached. I think I can say without fear of contradiction that the public health officials here in North Carolina compare favorably with those of any other State.

The midwife is a necessary evil for obvious reasons. The large majority of them in the South—90 per cent—are uneducated negro women. Naturally the death rate among the newly born attended by them is relatively high. 34 of the 100 counties in the State have courses of instruction as to the very elementary essentials of normal delivery. They

are taught the principles of asepsis, and rather what not to do. 2,550 of the 6,500 midwives in the State receive courses which are outlined by the State Board of Health.

According to the 1926 reports of midwife control (Children's Bureau U. S. Department of Labor—Publication No. 178) our State had less midwife control than any State in the registration area. This may be one of the factors which has to some degree influenced our high infant mortality.

Vital Statistics. The reports of births and deaths to the vital statistics department of the North Carolina Board of Health are more complete than probably for any of the Southern States. 92.6 per cent of births and deaths are reported. It may be a paradoxical fact that the very efficiency of our vital statistic reports have served to place us in a humiliating light when compared to other states.

Be this as it may—we must realize that far too many infants die each year and that we must seek some possible way of lessening this number. It is obvious to all that this can only be accomplished through the education of mothers as to the care and feeding of their young babies. For a good many years we have conducted baby clinics in the neighboring towns to Raleigh. Others of you have done the same. Such clinics have been under the auspices of the local health department, or at the request of some organization, as the Parent-Teachers Association, or Woman's Club of that particular community. Such clinics have been desultory and more frequently than not only one in a town. Yet I feel sure that even these have accomplished definite good, and have noticed that as time has passed mothers have become more and more interested to learn and to apply this knowledge. It is difficult to estimate the value of the experiment tried by the extension department of the University of North Carolina 10 or 12 years ago, when two well trained pediatricians from outside the State were employed to give a course to groups of physicians in North Carolina. Each of these specialists had a circuit of six towns—to one of which he went each week. After the lectures upon the practical aspects of pediatrics, the clinic followed—cases were diagnosed, treatment prescribed, individual problems discusssed. The effect of these courses was permanent. Last year similar courses were given—extending over a period of several months Some such plan upon a more extensive scale—which would cover a much larger portion of the State, and not a few isolated areas, would be instrumental in lowering our infant mortality. It is the rural sections which would profit most, for the larger cities for the most part have well trained pediatricians, and well organized health departments, and free baby clinics.

It has occurred to me that the State could appropriate necessary funds to no better purpose than to employ a whole time pediatrician—operating either from the State Board of Health, or possibly from the State University, as a part of this institution's extension service. Many well trained men who have just finished their hospital service would, I believe, be glad

to fill this position for a period of several years. Whether a course conducted primarily for physicians or clinics given directly to mothers, or some other plan would be most profitable I would not attempt to say—but I believe that a Division of Pediatrics in our State Health Department would bear as high a rate of interest in saving lives as in any investment for other purposes the State could make as a public health measure.

In order therefore that something tangible might come from these discussions—I move that this pediatric section request the State Board of Health to appoint a committee of three to confer with a similar committee selected from this section in order to determine upon the feasibility of employing a whole time pediatrician by the State and that the committee representing this section report upon the success, progress or failure of this undertaking at the ensuing meeting of the State Medical Society.

INFANT MORTALITY AND THE OBSTETRICIAN

By Dr. Oren Moore, Charlotte

It is axiomatic in the animal husbandry science that a careful selection of brood stock is essential for perfecting the offspring and an analogous situation obtains with regard to the human animal. Eugenics and prenatalists have long recognized this basic fact, but to date they have been able to do very little towards employing such knowledge. The reason for this failure is predicated upon the fact that we are dealing with individuals who, whether fitted by nature for parenthood or not, still demand the right to exercise the privilege. Here and there half-hearted legislative efforts have been made to control mating of undesirables, but from the very nature of human beings, such attempts are doomed to failure.

Therefore, since we cannot in any appreciable percentage of cases control the selection of breeders, our efforts must be directed towards preparing the substandard units for parenthood and carefully nurturing the offspring when it arrives. With the first endeavor, the heavy responsibility naturally falls upon the obstetrician and prenatalist, and with the latter aim, it devolves upon the pediatrician, but no branch of medicine is entirely exempt from participation in such a program, as all phases of human health and environment react upon the function of propagation and make for success or failure.

Now, since the mother is most directly involved in bearing and nourishing the offspring, our efforts are largely centered upon her. If we are to have reasonably healthy children, we must perforce have reasonably healthy mothers. It is within the province and likewise within the power of the physician to advise obviously unfit persons against parenthood, and to provide them with suitable contraceptive knowledge. Moreover scientific data is available in determining what constitutes obvious unfitness. No student of this problem need remain in ignorance of certain basic

facts which will guide him in giving such advice. (For example: mothers who have repeatedly suffered from puerperal mania, or again: active syphilitics, anaemics, etc.)

(Interpolation No. 1): By that I refer to the obviously unfit. We are perfectly certain that some people ought not to have babies, for instance, your repeated cases of puerperal mania in mothers. It seems to me, in spite of what has been said, maybe at this meeting and in a great many other meetings, that we have a right to say a woman because she has been insane, cannot bear children. I don't see why we haven't a right to say the mother who repeatedly goes crazy when she gets pregnant or immediately after delivery, should be sterilized or advised against parenthood. Anyway, provide her with adequate contraceptive knowledge. Those cases are tragic beyond words.

I have recently seen a mother who had killed three babies within the first three months of their lives. She went crazy every time just at the end of her pregnancy and sometimes within three months thereafter would strangle or smother or drown the baby. I had no hesitancy in the world in sterilizing the woman. I don't see why she should be confronted, when she recovers her sanity, with the fact that she has killed her baby. Why bear a baby and then turn around and kill it?

Active syphilitics ought to be prevented and we have a law to that effect. Anemics have no right of bearing children for the sake of the children and the mother. There are a number of diseases we could name.

To talk about contraceptive methods, the lay literature, as you know, is full of all sorts of vague allusions in the backs of magazines to horrible pictures of mothers who have borne too many babies and how lives have been ruined by this and that and the other because they don't know how to keep from getting pregnant. When you write to the people who are getting out books on it, you will find they haven't any special high degree of knowledge, but are usually advertising something like a Ramsey pessary or a vaginal diaphragm or something like that. Nevertheless, it is a problem, and I know that aside from the fact of bearing of undesired and substandard babies, it is a problem, that matter of whether or not new children shall come, and it is a cause of most tremendous unhappiness in a great many domestic establishments in America.

At once you say, "What are you doing about it? Doctors ought to have something to do with guiding the destinies of those people." So I think we have the right to determine whether a given child shall be born into the world before he is conceived, not afterward.

I do not consider that the obstetrician's whole duty is discharged when he manages to deliver with reasonable success a mother who is suffering with some of our recognized incurable diseases, and then consigns to the care of the infant specialist an imperfect little creature who by reason of faulty inheritance is already doomed to cosmic failure. Rather do I conceive it to be our duty to prevent, whenever possible, such conceptions and thereby save to parent and offspring much useless suffering.

When we have, as wisely as we can, selected persons for potential parenthood, we must concentrate upon keeping them in condition to fulfill this potentiality, and here prenatal care comes into its fullest perfection. The careful supervision of pregnant women is, to my way of thinking, the soundest insurance against infant mortality. If the mother is brought to confinement in splendid mental and physical health, she has gone a long way towards assuring her child of a future robustness. No branch of medicine pays such dividends for time and thought spent as does prenatal care, for in no branch do we find such wide ramification of influence as in this field: in safeguarding the expectant mother, we safeguard the child, protect the home, and lay a secure foundation for future society. I might also state in passing that no branch of medicine pays such royalties in dollars and cents, as there is a growing appreciation, on the part of the layman, of such skillful attention, and even more than appreciation, there is an undoubted demand, and the wise physician will recognize its justification and prepare himself to furnish it.

When proper supervision and education have been instituted, when existing abnormalities have been corrected as nearly as possible, then the responsibility comes to rest upon the obstetrician's shoulders for a safe delivery for both mother and child. It is a travesty upon science if, after rigorous and efficient supervision, we are able to bring our patient to delivery in perfect health, and then by ill-advised precipitate or ignorant obstetrical procedure we produce invalidism for the mother, or birth injury for the baby. New and bizarre methods of delivery, short cuts and operative inductions, are sure to take toll in maternal and foetal morbidity. It is wise for the general practitioner to remember that nearly all spectacular obstetrical procedures are devised by experts and intended for expert use, that nature will be better served by nature's methods, and that the average case will do far better without interference. I cannot condemn too thoroughly such practices as tend to induce labor at early and unripe dates simply because a certain time better suits the convenience of all parties to the gestation.

(Interpolation No. 2): I wouldn't seem to be attacking any of my professional brethren who are using new methods of delivery; certainly some of them are making splendid successes at it. Yet every once in a while I will lose a patient to some obstetrician who is going to deliver a baby on a given date, perhaps the father's birthday or the mother's birthday or some other date they have set. My women go over to those obstetricians and, as I say, I lose occasionally. I hear the most glowing accounts of how he took her through from five o'clock in the afternoon until twelve o'clock that night when the baby was born. He put in a bag and gave her morphine. When the dilatation was complete, he did a version by extraction of the feet or some such thing like that. Strange to say, they filter back in the course of a year or two.

Some of them are cases like this: I was coming over from Cuba on a boat and a man came over and talked to me and Sharp, the brain surgeon.

He said, "I have a son I wish you would come by and see. He is seven years old and is spastic. He never developed properly. He is mentally behind and all that."

Sharp said to me, "You ask him how the delivery was."

I asked him. He said, "That was the shortest delivery we had. We had Dr. So-and-so. He put in the bag. We had had three babies before. I don't know whether the baby's brain was injured," which evidently it had been, an intracranial hemorrhage, "whether it is due to precipitated labor or the induced labor, but I have a strong suspicion it was."

The man who did the induction is a very prominent obstetrician in the South and is doing splendid work, but from time to time I hear of some baby that has been in bad shape afterwards. We who are not doing that particular specialized method are having some intracranial hemorrhages, too, but I don't believe we are having any higher proportion of cases. It have been definitely determined that intracranial hemorrhage and intracranial birth injuries play a big part in the early infant mortality. It has likewise been determined that the peculiar and unusual and inept application of forceps has been the cause of producing brain injuries. Consequently, we come back to the obstetrician again. By careful observation of the patient before she comes to labor, we are able to determine within reasonable bounds the size of the baby. Big babies have an unhappy arrival usually and sometimes a complicated arrival with consequent hazards. If we keep those babies down within reasonable bounds, the average pelvis in this part of the world will deliver them without event. If we keep the babies in proper relationship to the mother's pelvis and if we are sure the mother's pelvis is normal beforehand and if we refrain from doing any peculiar things I have mentioned here, we are likely to have babies born about normally with just the average per cent of abnormalities that are due to birth injuries.

So from the obstetrician's standpoint, my whole statement is that if the mother arrives at labor in good health and under proper supervision and if the thing is attended with a reasonable degree of skill, we have done our full duty towards presenting to you gentlemen the child for you to look after. Further than that I don't know that we can go.

When one wishes to summarize this discussion, one is bound to admit that so far as statistical data can ascertain obstetrics has made little, if any, advance in this section of the country during the last decade; that more obstetrical teaching is needed in medical colleges; more general knowledge of obstetrical and prenatal problems should be acquired by the physician; wider dissemination of information among laymen is of paramount value; that hospitals should provide more adequate care of maternity cases, and that prenatal clinics should be established in every county.

CHAIRMAN'S ADDRESS

A COMPARATIVE VIEW OF NORTH CAROLINA'S INFANT MORTALITY

By Dr. L. W. Elias, Asheville

The vital statistics of 1927 placed North Carolina's infant death rate at 79. That is in every 1,000 babies born alive 79 died before the end of the year. If these figures are to have meaning it must be found by comparison with other states. This brings us to the object of the paper, namely, to awaken interest and action regarding the deplorable infant mortality in North Carolina. This object is my apology for the frankness with which I shall try to deal with a situation that is too serious for anything but the plainest and fullest discussion. This, I trust, we shall have.

Disregarding figures, let us see how North Carolina stands among the 40 states in the nation's registration area. To our surprise we find that only three other states have a higher infant mortality than North Carolina. These are: Maine, Maryland and Arizona. And this is in spite of the vast strides that we have made along all lines. But with our other improvements we have not advanced in health measures. In fact, we have relatively slipped back, for in 1926 seven other states had an equal or greater death rate than we, and now only three states save us from first place at the wrong end of the line. In 1927 North Carolina made an improvement of three points over her record of the previous year while the average improvement for the nation was eight points, so with this in mind we are prepared to learn that North Carolina for the past eight years has done little more than mark time. Its rate eight years ago was 84; six years ago it was 75; and last year 79.

The foregoing is bad enough, but worse is just ahead. North Carolina is a rural state. Less than one-fifth of the people live in cities. This is well for us, because in spite of the splendid health facilities afforded by the cities, such as doctors, nurses, hospitals, clinics and the like, we yet see that under the healthier living conditions in the country only two babies die to three in the cities. Whereas the rural and urban death rate for the nation is about the same. Therefore, it appears evident that babies born in the cities of North Carolina have about the poorest chances of any babies in America of celebrating their first anniversary on earth. Only one other state in the Union has an average city infant mortality higher than North Carolina. This is Arizona, whose two little cities with a combined population about equal to Winston-Salem have a death rate average of 120, while Winston-Salem's rate is 122. Of North Carolina's fourteen cities eight show over 100 deaths to the 1,000 births. No state in the Nation equals this. Wilmington loses 128 babies which is tragic. But Asheville, nestling among the clouds in the "Land of the Sky," the world's justly famed health resort, has a death rate of 112. There are only five other cities in the United States of equal or greater size, outside of North Carolina, who

blush at as high a death rate as Asheville's. Gentlemen, these facts are enough to arouse us to the best efforts within us. If we need a further spur, we have it in the fact that New Bern has the highest infant death rate of any city in the entire United States. It is in a class entirely alone. No other city even nearly approaches it. Portsmouth, Virginia, has a rate of 154 while New Bern's rate is 199. One New Bern baby out of every five dies during its first year. As illustrating the wide range of possibilities in health matters between what they should be and what they should not, we note that Alameda, California, has an infant death rate of nine, compared to New Bern's 199.

Perhaps a pause should here be made, because any tale of woe, at first shocking, begins to grow tedious, and our attention wanes. We would turn away in weariness from further contemplation. However, I must ask your forbearance and patience a little further in this matter.

What has been said regarding North Carolina's disproportionate infant birth rate of 79 compared with Oregon's 48, with many other states in the 50's, and only three showing a higher rate than North Carolina is bad, and the fact that we have made almost no downward progress in the last eight years is depressing enough when we had hoped for great things from our wonderful state. But our cities letting babies die as the cities of no other states in the country do is alarming. What plague has fastened upon the vitals of our great Commonwealth? And yet we have not reached the worst of our story. We have only been measuring ourselves in terms of America, Now, we must remember that the United States herself in 1926 ranked seventh from the lowest country in the world. New Zealand standing at 40, which rating she has maintained for the past three years. In fact, she has gone as high as 51 only twice in the past twelve years, thus showing that infant deaths can be curtailed at least to this extent. Norway and Sweden are down to 46 and 55 respectively. Hence we see that while North Carolina stood abashed at her record in America; in the eyes of the world she stands even more strongly condemned. What next? Just this: That the mad folly of allowing such a condition to exist is accentuated by the estimate that at least one-half of the infant deaths can be prevented, if we will. Is it possible that awaking to a realization of our plight, we will continue to permit thousands of tiny infants to die? We say tiny because one-half the infant death rate is in the first month, and one-third in the first week, of life. There is a further sad note to the infant death rate. It has been shown that for every baby who dies five more suffer useless illness, and, as a consequence of this, many are crippled for life; while on the other hand, as the State's interest is aroused to securing a reduction in infant mortality so the public conscience is quickened to secure better health in other fields; and this is done.

From all this, we begin to gather something of the magnitude and seriousness of our problem.

Let it be understood that these discouragingly incriminating facts would not have been paraded before you if it had not been felt that they

were entirely unnecessary, and that there was hope of improvement. But first there must come an awakening to what the facts are. We have not been careless—rather we have been asleep. We have said that we had the highest birth rate in America and have not known the exact meaning of our infant death rate. While we knew that relatively more North Carolina parents were gladdened by the arrival of a tiny baby we did not understand that in only three other states was their stay so brief and the home so soon darkened by the little guest's departure. After wasting our bountiful baby life like a drunken sailor, we are now awake, and may we keep us yet awake, until this dark shadow is lifted from our great State.

To stop here without suggesting at least an outline of what we must do would leave the subject only half treated. In a correspondence with some twelve or more health departments of America's best and worst states, as regards infant mortality, I have gathered that the measures which have been most successful in their hands from the public health standpoint has been unremitting publicity, and education. Let us see where some of our own chief troubles lie. We have a population of about one-third negroes. This means that we have a race among us whom we have cursed and who are a curse to us. They are a race of tenants, domestic servants or industrial workers. In all fairness to them, and to ourselves, we must redouble our efforts to help them remove the curse of great poverty and ignorance and high infant mortality, by carrying to them, through their doctor's and nurses, as well as by our own, all possible health measures.

In our own mountain counties, we have only one fourth as many negroes as the rest of the state. In some of the 10th district counties no negro baby has been born in the past few years so that our negro problem is relatively small. Also our diarrheal death rate is one-half that of the state, yet this is the third largest cause of infant mortality. Here much can be done by better feeding methods, by insisting on breast feeding, frowning on the idea that we now have artificial food almost as good as mother's milk, keeping clearly in mind that four times as many artificially fed babies die as breast fed. This care, with better milk supplies, lactic acid milk and better hygiene will do much.

Pneumonia is the second largest item in infant mortality. This is a house disease—sun baths and the greatest possible outdoor life will do wonders. The baby's sun baths may be begun within the first month at any time of the year.

Birth conditions, such as prematurity, malformations, congenital weakness, and birth injuries, constitute over 35 per cent of the infant death rate. On this largest factor we must focus our best efforts alongs the line of prenatal care. Also insist on better obstetrics, remembering, as some one has put it, that haste is permissible only to save life, never to save time. Following the delivery we must surround the tiny newcomer with the best that pediatrics knows. But we must recognize that in spite of the

vast economic strides which have been made our state is yet comparatively poor, and we, as doctors, must resolutely shoulder more than our part of this work by giving much free community service and public health work, guided by, and cooperating with, the State Board of Health, and any other agency that will aid, such as the Junior League, the Parent Teachers Association, etc. If we do this the public will follow as has been shown by such examples as the railroads in Georgia where they have readily agreed to lend their aid in securing medical assistance for the poor. By the further fact that in some of the western states the laity has been more energetic in securing health appropriations than has been the case with the medical profession. The public is waking up to health methods. Humanity is always aroused at the cry of distress. We as doctors must also awake and take our rightful places as leaders in this work. We must do it for humanity's sake and for the sake of our great state. Standing confronted by the appalling loss of infant life in our State, Ward, Harrison and Elias, cannot hold up their heads as long as Asheville has an infant death rate of 112 while Colorado Springs has only 65. Sidbury must feel hard put to it to explain why Wilmington has an infant death rate of 128 to Mobile's 74. And we with Bender must understand that as long as New Bern loses 199 babies to Vickburg's 85, we are in a desperate condition calling for the best in us all. And surely we will give our best, unless we can forget the yearly thousands of tired baby eyes which have quietly closed in death as a mutely pathetic reproach to a state and medical profession which is so carelessly prodigal of its tender child-life.

Chairman Elias: This closes the symposium and we will now have the symposium opened by Dr. W. C. Verdery, of Fayetteville, who is to discuss Dr. Butler's paper.

DISCUSSION

Dr. W. C. Verdery, (Fayetteville): Mr. Chairman and Gentlemen: So much has been said and so many figures have been given us over a period of some forty-five minutes, that it has gotten us all muddled as to what North Carolina's position is at the present time.

It seems that the paper I am to discuss is relative to the industrial side of both parents of the unborn and the born child. I say unborn because so little has been said about the still-born baby. We must consider that the baby that dies near maturity, or at eight months, must be considered as one of the factors in our mortality rate. If we consider that fifty per cent of the infant mortality under one year of age occurs in the first month of life, it must be due to some internal derangement, rather than from feeding or infectious diseases. The mother must contribute the greater portion of this internal derangement.

The working mother should be taken away from her work three months prior to the time the baby is expected and, if possible, keep this mother away from her work for the six months following the confinement so that that baby may enjoy breast feeding and thrive as it should. The

laborer or semi-laborer, the unskilled laborer, has a very small amount of money to pay the physician and, as the doctors have said before, the midwife throughout North Carolina has been doing a good portion of the maternity work for the physician. In my county last year, 104 white women were delivered by negro midwives. The physician does not see this infant early. Labor may produce birth injury or many other things could occur within that first month of life, and the infant mortality of North Carolina is 50 per cent in that first month of life.

I wish I could add something to what the essayist has already told you other than to remember that the still-born baby should be added to our infant mortality. (Applause.)

Dr. Marion Yates Keith, (Greensboro): Mr. Chairman, after hearing the papers of the members who have gone before me, there is no doubt in my mind as to which portion of the state I would rather live; that is, with the increase of high mortality rate in the extreme west, it leaves Greensboro or the Piedmont section evidently the best section in which to live. For that reason I hope that none of the pediatricians will become sick before they leave our city.

I don't feel that I can add anything to what has been said, but to me there are just a few facts which are responsible for the increased death or mortality rate that should be cited. First, I think that a lack of knowledge on the value of education as to the simplicity of infant feeding is one cause. To me the sooner we get away from a jumbling of formulas and milk feeding and come down to the simple food mixtures with simple instructions to the mother, the sooner the death rate or the infant mortality rate will be decreased. I think the South and the states below us have had a Godsend in lactic acid feeding. It is foolproof to the most ignorant, and there is practically no mother, whether a black mother or the most ignorant white mother, who can not carry out a few simple instructions as to care in feeding of her child with lactic acid milk.

Again, I think there is insufficient cooperation between the general practitioner and the pediatrician. In many cases I feel that better results could be obtained if consultation could be had more frequently and earlier in the period of illness. I feel that there are times when such diagnoses are made and results to be had are poor because of the fact that the patient is too far gone to respond to the treatment. I think if we could get a better cooperation between the general practitioners and the pediatrician, that the two together could certainly go shoulder to shoulder in decreasing this rate.

Again, I pay my respects to the public health nurse and to the Public Health Department. I think that is one of the greatest means with which we can educate these people. That is, as I said before, a lack of knowledge or education is the primary factor and it is impossible for the pediatrician, it is impossible for the practitioner or the obstetrician to go before these people, and we can only reach them through education, public health nurse, or through the Public Health Department in their instructions as

to feeding, as to the necessity of having the baby cared for by a doctor, through regular visits to the doctor.

I do not feel that too much emphasis has been laid upon the prenatal care of the child. Oftentimes in the course of office routine examinations, positive Wassermanns are found on new-borns. I am sure not all obstetricians take routine Wassermanns in their daily work. Of course, the time to get those things, the time to lay stress upon the new-born is when the child in conceived. For that reason it is of advantage at that time to bring the question of cod liver oil and sunshine and those things that are essential to prenatal care to the mother's attention.

I don't feel that I can say anything more in addition to what has been said, but the simple fact is, the sooner we educate the people by means of the Public Health, the nurse, through the doctor, the sooner the mortality rate will be decreased.

Dr. H. H. Harrison, (Asheville): I just want to stress two or three things that I spoke of before. Despite figures and statistics, I believe that our greatest infant mortality is in the country and in the small town. I think we ought in some way (what is the best way, I can't say) get our country doctors give, and expectant mothers in the small towns to demand, better and more prenatal care.

Another point I believe would help a great deal would be to get our general practitioner a little more interested in the baby. Our general practitioner looks upon a sick baby as being some kind of a queer animal that he doesn't know much about. Maybe he is right and maybe he is wrong. Anyhow, that is the wrong attitude. If he doesn't know much about it, he should call in somebody else. Really, what he ought to do is brush up some on pediatrics, especially the pediatrics of the first month of life, as well as the first year of life.

Then one other point is: I know a great many of our ignorant women, ignorant mothers, do this as the first thing when the baby gets sick: They call in an old woman, and that is where a good deal of good time is lost. The doctor gets there two or three days later perhaps and it is a much greater problem and it is much harder to do something. Those are three things I think we should think about.

Dr. J. B. Sidbury, (Wilmington): The fact has been brought out by Dr. Elias and others that the infant mortality rate is fifty per cent during the first month of life. It is fifty per cent the other eleven months of the first year of the child's life. Therefore, it behooves us to put our greatest energies in the reduction of the first month of life and to my mind prenatal care stands out preeminently as our problem in reducing infant mortality. I wish that all of you could have heard Dr. Houston Moore's paper yesterday, when he stressed the importance of the care of the expectant mother. To my mind, that is the keynote to the reduction of infant mortality. If we take this expectant mother through her pregnancy, and, as Dr. Oren Moore has said, give her a careful delivery, then certainly

we are going to reduce our infant mortality to a greater extent than by any other method of procedure.

The well baby clinics are a great help. They have a longer time to exert their efforts. They should continue on, but it seems to me that the first month of life is the time when we must put forth our greatest energies. Birth injuries, congenital abnormalities, syphilis, malnutrition and congenital debility, all reap their heaviest toll during the first month of life. If we give the expectant mother and her unborn baby the proper prenatal care throughout pregnancy, the high infant death rate which occurs during the first month of life will be reduced.

Dr. Aldert S. Root, (Raleigh): I haven't anything to say except that that motion in my paper is put tentatively, subject to the discussion of the house, because I realize it is a very difficult thing to institute a division, a new division in a health department or have a permanent plan made by university extension.

I would like to hear that discussed and I don't want to put that motion if it is the opinion of the Section that it will be futile to do so. I would like to see it passed myself.

Dr. B. U. Brooks, (Durham): Mr. Chairman, I feel that the question of lowering infant mortality in the state is largely a question of education. I am firmly convinced of the fact that there is no better method of educating the mother in the care of her baby than through a well-baby clinic. This not only teaches her the immediate care of the baby, but it teaches her a close observation of her baby throughout its life.

There are two things necessary in the conduct of a well-baby clinic. The first is that the one who conducts this clinic must have a great enthusiasm for the work. He can't lay down on his job. He can't be present about once every three or four meeting times and expect to have a mother interested in his clinic.

The second thing is perseverence. He must keep on his job and go at it even though he has a very small attendance at his clinic. The clinic must go largely on the momentum and enthusiasm of the man who is conducting it.

There is another thing in my judgment that is essential in the establishment of a well-baby clinic. That is it must be placed at a convenient location; the ideal location for a clinic would be right in the center of an industrial area. These mothers are not interested sufficiently in their babies to take them from one end of the town to another, but if you put the clinic right in their midst, they will frequently, out of curiosity to see what is going on at this clinic, or else to compare their babies with Mrs. Jones's baby who lives next door, take their babies to the clinic. When you once get a woman started, if you have sufficient enthusiasm yourself, you will be able to keep her interested and have her return to the clinic as often as necessary.

I have been very much interested in the figures that we have had in our death rate in Durham. We established our first baby clinics there in 1920.

I think this was the first baby clinic established in the state. In 1920 our infant death rate was 123.5; in 1921, it was 101; in 1922, it was 84; in 1923, the city and county health department became interested in the clinics sufficiently to take them over and establish a visiting nurses' association through the Health Department. I might say also that during that year there was a new arrangement of their birth reports, so that the death rate that year showed up 143.7.

In 1924, we had a death rate of 95.2; in 1925, 101.5; in 1926, 95; in 1927, 83.6; in 1928, 80.4. It is interesting to note how closely the number of clinic visits coincides with that death rate.

In 1922, of which we report only five months of the clinic, we had an attendance of 932; in 1924, we had 2,119; in 1925, we had 2,962; in 1926, we had 3,033; in 1927, we had 3,125; in 1928, we had 3,380 visits to our clinics.

Just how much the well-baby clinic has had to do with reducing the infant mortality in Durham, I am not able to say, but we do think we have done our part. (Applause.)

Dr. Oren Moore, (Charlotte): Mr. Chairman, my main reason for wishing to engage in this discussion was to discuss Dr. Root's motion in the light of this suggestion. Since all of the babies in North Carolina are by no means attended by pediatricians and a very small percentage of deliveries are done by obstetricians, it comes back to the fact obstetrics and pediatrics are done in the great majority by the general practitioner, and yet the general practitioner hasn't got any of this discussion today. Would it be at all feasible to have a co-joint session of your section and my section at a future meeting of the State Society, say, next year, at which all these problems could be discussed openly before the general practitioner? You gentlemen are just aware of what is happening, as you have shown here today, but you are quite capable of holding up your end of reducing this mortality in children, but you can't reduce mortality among children if you are not treating them. Nor can the expert obstetrician do all of the work of delivering.

It seems to me the people who should get this information are not getting it today. It is startling to me because while I knew all about our death rate or still born rate, rather, I didn't know about the death rate the first month and first week of life. When I wrote my paper, I said we were perfectly willing to assume our responsibility for the death rate among children. I didn't know exactly where it lay. I know now when we go out we feel responsible the first week that carries one-third of the death rate. That is obviously an obstetrical problem, not a pediatrics problem. We must assume our responsibility for every one of these deaths. We must, on top of that, assume the responsibility of the stillborn as Dr. Verdery brought out. That is not yours; that is ours now. Why can't we get this before the Society as a whole, because it is the most illuminating information, somewhat depressing information? But it ought to go to

those very people for we will never be able to deliver all the babies and you will never be able to treat them all. It is going to be done by the general practitioners.

Dr. Root made an observation about the midwife problem. While it offers the obstetrician some little theoretical refuge, as a matter of practical effect is doesn't help him out very much. Statistics in Rhode Island, I believe, (and I have not seen these statistics recently, not within two or three years) show the highest per cent of children is delivered by midwives and they have the lowest mortality to mother and child. We won't say the obstetrician is called in at the last minute to deliver all the complicated cases and the midwife only signs up for the normal cases she delivers, thereby getting credit that is not due her, for those statistics were based on cases where the midwife did the whole procedure and the doctor did the whole procedure in his cases. Then they were evaluated as to the obstetrician and the midwife and the midwife beat the obstetrician all to pieces in the mortality table.

Replying to Dr. Grayson, I will only say I don't think I said anything at all about limiting the number of children by the size of families. I said those "obviously unfit parents." But I might reply that if Jesse James's family had had only five children, we would have been saved Jesse James's record. (Laughter.)

Now I am going to say something about Dr. Grayson. When he talks, he talks with authority. Dr. Grayson has delivered more babies in any given length of time than any other doctor in the State of North Carolina. He holds a record. So if High Point's death rate should suddenly go up, you will know who to blame it on. (Laughter.)

Dr. C. S. Grayson, (High Point): I live in the favored city with the lowest death rate in the State. I never was so proud of myself in my life.

I think that a good many factors have to do with the fact that High Point has the lowest death rate. One is that the district nurses are nurses who are employed by the city, are under the supervision of the city health officer. They have an office with the city health officer. They are told and they are instructed just what to do, what kind of advice to give people, where to go, and just who to deal with, and in that way we save a good deal of lost motion. If these nurses are appointed by the health officer and allowed to work without any supervision, I think you lose at least half the good that might be obtained by their employment.

Then, too, the city of High Point has twenty per cent or less colored population. The city of High Point is an industrial city, not so much a cotton factory district as it is a furniture manufacturing center. Those people are paid better wages than the average cotton mill operator gets, and even the colored people live much better than colored people do in various cities.

Then as to Dr. Root's suggestion of some work that might be done by the university extension bureau, we had Dr. Garshrif of the University of Chicago about eight years ago. He gave us the pediatric lectures, and

I have heard the doctors from High Point repeatedly say that those lectures, his instruction on infant feeding, prenatal care and so on, had materially reduced the death rate in infancy in our city. I think the State of North Carolina can spend money for no more worthy purpose than to teach not only High Point and some of the cities, but all of the cities and counties this problem of infant feeding and infant care and prenatal care.

As to Dr. Moore's suggestion of contraceptive devices, that has been a thing I never quite got consent in my mind to agree with. For instance, we have the case of large families. If Benjamin Franklin's mother had been satisfied with sixteen children, we would never have had Benjamin Franklin. Benjamin Franklin was the seventeenth child in the family. Benjamin Franklin did more to free America from the English crown than George Washington and half a dozen others like him. Benjamin Franklin went to France and borrowed money to prosecute the war and succeeded in getting the assistance of France at the time.

So far as the midwife is concerned, we have very few midwives in High Point. I don't think we have five white babies delivered in High Point in a year by midwives. I think the reason so many doctors are worried by the midwife is because they handle their cases very much as the midwives do. I don't see why a mother should pay a doctor $25, $50 or $100 to take care of her when she can get the same kind of service from a midwife for about $5.

I do some obstetric work. I employ a resident nurse, the best I can get. I have employed her for five years. She has a car of her own. She does prenatal work. She takes blood pressures and visits all of the patients. She gives them advice on various phases of the subject. She collects specimens of urine, and examines them, keeps a record. We keep a list of our patients. I can turn over a book in my office tonight and I can tell you the blood pressure and the amount of albumin and the condition of every patient that I have listed.

Dr. D. L. Smith, (Spartanburg, S. C.): I am glad to know what North Carolina is doing. North Carolina is doing this and South Carolina is away behind. I am happy to hear one time South Carolina was ahead of North Carolina is statistics.

In listening to the discussion here today, as Dr. Sidbury brought out, fifty per cent of the infant mortality is under one month, and in looking back over years past in my work, the past fourteen or fifteen years, as I sit in my office today and see the increasing number of slant-eyed Mongolian children and the spastic intracranial hemorrhages brought there, I wonder if our infant mortality is high enough. I sometimes wish it were a little higher when that type of case comes through. I wonder if we are not doing those children an injustice by reducing the infant mortality. That frequently occurs to me.

On the other hand, the thing occurred to me that today we have been bragging about the Untied States. We all know the United States is on top of all the other countries in wealth and in manufacturing and every

other industry and we are ahead, and yet we are lower in infant mortality. North Carolina is one of the top states in the Union in this progressive United States, and yet it is high in infant mortality. Should we be ashamed of our infant mortality? It might be a blessing to us, rather than something for us to hold up our head about, Dr. Elias. However, don't take me seriously. I don't mean what I have said seriously, but I do feel that we are each year growing better. Your state is growing better. All of our states are growing better in this infant mortality as we spread the propaganda. It takes time to educate the people and the people are beginning to be educated. I see no reason for us to be alarmed about the statistics they have brought up here today. I feel it is only a matter of education which you are doing. You are pushing that. I don't know of any state in the Union that is any better than North Carolina is in the way of public health education to the general public and I myself, because I am not a North Carolinian, claim part of North Carolina part of the year, claim citizenship in North Carolina part of the year, and I do not feel we should be alarmed about these figures that have been brought before us today. I am glad to have had the opportunity of being with you. (Applause.)

Chairman Elias: Is there any further discussion, gentlemen? We don't want to prolong this if there is no discussion. We will be glad to hear from anyone who wants to discuss the subject. We have rushed through and we have a little time to devote to this if there is anything to be said by any of you. It is a matter of life and death to thousands of babies as to what we decide to do.

If there is no further discussion, Dr. Butler will close the discussion of his paper.

Dr. Butler: Mr. President, I have nothing further to add.

BLOOD TRANSFUSION

By T. M. Watson, M.D., Wilmington

The transfusion of blood is coming more nearly into its deserved place as a therapeutic measure in combating the various diseases encountered in infants and children. For decades the laity and members of the medical profession as well, have looked upon the transfusion of blood as a dangerous procedure to be undertaken only when every other therapeutic measure has been tried and the patient had failed to respond. On account of the fact that it has been used only in cases, "in extremis," the mortality rate has naturally been high. In the past few years we have begun to awaken to the fact that the transfusion of blood is indicated in the child who is generally under par, though not acutely ill. It is looked upon as the master tonic which can be used to restore health rather than an emergency measure to be used on those moribund.

In the anaemic child a new supply of blood free from disease will often turn the tide toward health, regardless of the cause of the anaemia. The

reduced haemoglobin and red cell count may be the result of a low grade infection with tuberculosis, diseased tonsils, intestinal parasites, infected sinuses, or hidden foci in some other part of the body. It matters not where the focus nor what the causative organism, the fresh blood will give the body a better chance to overcome the toxins produced. Often the new soldiers thrown into the fighting line will strengthen the body defense to such an extent that it can clear the focus without operative interference. Quoting Moldowski: "Where new mature erythrocytes are put into the circulation by transfusion the bone marrow, which has been kept under constant strain in supplying the demand of the depleted organism, is given opportunity to rest and recuperate for better service later on."

Foci of infection should be removed at the earliest possible moment. Often, however, we cannot eradicate the focus even though the most radical operations are performed. If the pus is in the tonsils, adenoids, or mastoid antra, it can usually be cleared out completely. If, however, the focus is in the ethmoids, sphenoids, or other accessory sinuses, it is not possible to clear it so completely, and a mighty army of defense is necessary to finish the task which is begun when the surgeon drains the infected area.

In chronic infections, where the body defense has been treated roughly for a long period and has been almost overcome, help, in the form of new blood, is as definitely indicated as it is in the case of a child who has all but bled to death as the result of an incised artery. Many children, victims of long drawn out absorption are sacrificed to an unimportant intercurrent infection, which they would have been able to throw off, had their defense been fortified by the addition of fresh whole blood.

Another field in which the transfusion of blood is an emergency operation, just as necessary as is section in the case with an acute abdomen, is the profoundly toxic child who shows something like the following syndrome: fever, vomiting, diarrhea, abdominal distension, anhydraemia, and acidosis or alkalosis. We see this picture in many different infections such as influenza, pneumonia, typhoid, acute diarrheal diseases, etc. It matters not what the causative organism, the transfusion of blood from a perfectly matched donor is in many cases a life-saving measure. The defense is strengthened to such an extent that the acute course is often ended by crisis, when it would probably have continued for several days. Without the blood many of these cases are terminated by death. In the transfused case complications are diminished in number and severity and convalescence is shortened markedly.

When the patient has a septicemia or is so profoundly toxic that the condition fails to respond as a result of ordinary transfusion, or in the case where it is unwise to increase the blood pressure on account of a weakened heart muscle, exsanguination followed by transfusion is an excellent practice. Here we take out the infected or overworked blood with its bacteria and toxins and replace it with new blood which is more able to carry on against the invading organism. Some have objected to this on

account of the fact that the exsanguination removes antibodies which the body has made for its own defense. I feel that unless these antibodies had been overwhelmed, it would not be possible to demonstrate living, virulent bacteria in the blood stream.

Our procedure is to remove blood until the patient begins to show definite signs of exsanguination, and then begin transfusion in another vein. Every time a syringe full is given from the donor the same amount is withdrawn from the patient. This is continued until we remove as much blood as the donor is able to replace. The more that is exchanged the better the result. In one very toxic child we removed 1,200 c.c. of blood and replaced it with 1,400 c.c. from two donors. Each donor's blood was matched with that of the patient and the blood of one donor with that of the other. The child had no adverse reaction following the operation, and before leaving the table showed improvement.

In extremely toxic cases no other procedure gives such spectacular results as does exsanguination followed by transfusion.

Blood transfusion is an operation which demands the utmost care. If this care is exercised, the possibility of danger is very small. We like the direct Unger method better than any other. It does not matter greatly, however, what method is used in giving the blood. The most important factor is the selecting of the donor. This should be a healthy individual, free from communicable disease. The blood must match perfectly. In order to determine whether or not the blood of the donor and patient are compatible, they should be tested for agglutination and haemolysis. Grouping is unsafe and we have discarded it as not trustworthy. We had a case during last month in which the blood of three universal donors was tried and in every case the cells of the prospective donor were definitely clumped in the serum of the patient. My own blood has been grouped by two experts, and I have been classified as an universal donor, still I have seen two patients this year whose serum caused definite agglutination of my cells. Cross matching seems to be the safest and most satisfactory procedure upon which we have to depend. The blood of the patient and donor must be carefully cross-matched before each transfusion. It is a definitely established fact in our experience, and that of others, that the blood of a donor which matches perfectly does not always match again after one transfusion has been given. I know of three cases who had most serious reactions when a second transfusion was given from the donor without rematching the blood. In a great many cases we have found the blood of the patient and donor incompatible within a few days after a transfusion had been given. We do not use a donor unless his cells, suspended in the serum of the patient (and visa versa) stand out individually without clumping, sticking, rouleau formation, or haemolysis for at least thirty minutes. Some workers hold that if dangerous agglutination is going to occur, it will show on the slide within one minute after the suspension is made. I know of an excellent surgeon, in another state, who follows the routine of allowing the

suspension one minute to act, and if there is no microscopic clumping at the end of this time, the donor is pronounced satisfactory. He told me that in quite a large series he had seen no serious reaction. I have seen a great many suspensions show massive agglutination at the end of ten minutes which appeared perfectly satisfactory when examined with the microscope at the end of five minutes. In fact most of the agglutination that I see begins two or three minutes after the suspension has been placed. Too great haste here is playing with danger and taking unnecessary risk with the lives of patients intrusted to our care.

CONCLUSIONS

1. Transfused blood in the case of the child who is under par, regardless of the cause, is a most valuable therapeutic agent.
2. When the very toxic patient fails to respond to ordinary transfusion, exsanguination followed by transfusions is of great value.
3. Cross matching is the safest method for the selection of a donor.
4. Before every transfusion the blood of the patient and donor should be tested for agglutination and haemolysis.

DISCUSSION

Dr. T. D. Walker, (Winston-Salem): Mr. Chairman and Gentlemen: I want to thank Dr. Watson for that interesting and instructive paper. We sometimes think that transfusion is a new procedure, but it is not. The first case on record occurred in the year that America was discovered, 1492, when Pope Innocent VIII was transfused, and it cost the lives of three youths and neither did it save the life of the Pope. Transfusion made little progress until Harvey discovered the circulation of the blood in the middle of the Seventeen Century, and it is a singular thing that the faculty of medicine at Paris condemned Harvey's discovery and also the progress that had been made in transfusion.

It was not until the latter part of the Eighteenth Century and the beginning of the Nineteenth Century that much progress was made in transfusion and the method then in use of connecting the blood vessels and of putting a cannula in the vessels was not satisfactory for many reasons. But with the development of the direct method, then the indirect method, transfusion has become very simple and practical.

It is true that only ten or twelve per cent of children under six months of age have agglutinins in their blood, and no receptors. Those don't develop until about six months of age. So a blood testing or grouping in a child under six months of age is not necessary for a transfusion.

Just a word about the quantity of blood to be used. Dr. Watson didn't mention that. The quantity usually used is about half an ounce or 15 c.c. per pound of body weight. So the quantity will vary from 2 ounces or 60 c.c. to 16 ounces or 500 c.c. I have never known of 1,400 c.c. or 46 ounces being given, as Dr. Watson mentioned.

It is hardly necessary to attempt to state all the indications for transfusion. It is used for so many things that someone has called this the blood age. Transfusion is beneficial in anemia, particularly secondary anemia, in hemorrhage of the new-born, hemophilia, purpura, toxemia, dehydration, athrepsia, probably alimentary intoxication, chronic impetiginous eczema, and a host of other conditions.

About 55 per cent, Dr. Unger says, of individuals transfused are helped and in 35 per cent of those individuals it is life saving. So with the development of the technic of transfusion and with a better understanding of the indications for its use, it has become one of the most useful therapeutic advances in recent years. (Applause.)

Dr. J. B. Sidbury, (Wilmington): I want to report one case. The child was three weeks old and operated on for pyloric stenosis. The child had a postoperative hemorrhage and blood was tested against the mother, grandmother and father. The mother's blood and the grandmother's blood were incompatible. The father's blood matched the baby's blood perfectly and the transfusion was given and the baby made a complete recovery. The child was only three weeks old. The mother's cells were agglutinated by the baby's serum and the grandmother's serum agglutinated the baby's cells. The father's blood was perfectly all right both ways.

Dr. Aldert S. Root, (Raleigh): Mr. President, I hate to be disagreeable. I seem to have a reputation of taking exception to statements, but I think it is very dangerous to transfuse a child six months old without cross agglutination of the blood of donor and recipient. I am sure that if that were done routinely, dire results would follow sometimes. That would be one thing I would want to get particularly. As for being a specific for hemophilia, of course, it replaces the blood only in that sense, because nothing is a specific for hemophilia.

Dr. W. C. Davison, (Durham): I hoped Dr. Watson would discuss that point. The people in Chicago used the peritoneal transfusion quite frequently. We had some experience with it at Baltimore three years ago, and the doctors found it entirely unsatisfactory, particularly with children with intestinal disturbances. It causes distension and I think retards the recovery from the original condition; certainly with children with infections, where they have a certain amount of distension anyway, I think a transfusion is contraindicated.

I think as Dr. Watson does, if blood is to be given a child, it should be carefully matched with a donor, whether the child is fifteen minutes old or any other age, because all the laboratory work done in recent years has demonstrated very clearly children have agglutinins from birth. The particular group to which the child belongs doesn't become fixed possibly until six months of age, but they do have definite agglutinins. Therefore, the old method of finding out whether the child's blood is type 1, 2, 3, or 4, has been discarded and the cross match with the donor has been substituted. If the true donor can be found—and, as Dr. Watson says,

it takes considerable search before some can be found—I think a transfusion is the satisfactory method of using blood. It is exceedingly helpful and produces more accurate results in some apparently hopeless cases.

Dr. T. M. Watson, (Wilmington), closing discussion: Mr. Chairman, It has already been brought out two or three times in this discussion what I think about the matching of blood in cases under six months of age. I saw the statement in a brand new laboratory book the other day that the blood of a baby under six months of age always matched that of the mother. Most of the transfusions that we have given have been in babies, the majority being about six months of age or younger. We find a very large number of these whose blood will match neither that of the mother nor that of the father. In one baby under six months of age we had to match 135 people before a suitable donor was located. This year we had a case of hemorrhagic disease of the newly-born in which the cells of both mother and father were definitely clumped in the serum of their baby, and several other people had to be matched before we got a suitable donor. On account of this experience we know that there are agglutinins floating around somewhere in the baby's blood. I think the blood of a baby fifteen minutes old should be matched just as carefully as if he were an adult.

The quantity that we give is about 10 c.c. per pound of body weight. If the baby has lost 2 or 3 pounds in three days from dehydration, then we give 10 c.c. per pound based on what he weighed before the anhydraemia came on.

In some cases you can't get anybody whose blood matches perfectly. In these cases, I think intramuscular blood is of very definite value. We give it that way occasionally, but if it is possible to give it intravenously, we do so.

I don't know much about the intraperitoneal transfusion of blood. I have used this route only once or twice, so I thank Dr. Davison sincerely for his remarks on that point.

VALVE FORMATION OF THE POSTERIOR URETHRA IN MALE CHILDREN AS A CAUSE OF URINARY OBSTRUCTION

By Hamilton W. McKay, M.D., Charlotte

Difficulty in urination, due to obstruction in the prostatic urethra, is usually regarded by the medical profession as peculiarly a disease of elderly individuals. However, it is occasionally met with and unfortunately seldom recognized in children.

In children difficulty in urination, and in certain instances complete retention of urine, is commonly caused by valvular formation in the posterior urethra.

Although the formation of these valves has been recognized for over 136 years, it is unfortunately true that the condition, as a pathological entity, has not been brought before the medical profession generally. This

is due to the fact that when present, the condition is falsely diagnosed as abdominal tumors, polycystic kidneys, Bright's disease, and neurological lesions. A typical case has recently come under our observation:

C. M. No. 235, fourteen years of age, referred to us by Dr. E. A. McLean of the Ashe-Faison Clinic, Charlotte, N. C. The child's complaint was difficulty in urination associated with attacks of complete urinary retention. The family history revealed that the father and mother were living and well. There were eleven brothers and sisters all living and well. No history of any congenital malformation in the family. The child was born spontaneously, had the usual childhood diseases and was the correct weight for his age. His present illness began four days before we saw him. At that time, he stated that he suddenly had complete retention of urine. He was taken to the Ashe-Faison Clinic where Dr. E. A. McLean was successful in catheterizing him. This gave temporary relief and spontaneous urination was again established, although it was not free. He again went into complete retention and was catheterized the second time. He was then referred to us for an explanation of his urinary difficulties. The parents gave a negative past history. This is not remarkable when one considers the fact that the child is one of eleven. However, upon closely questioning the boy, he stated that he had always had difficulty in urination as long as he could remember. That he had always had great difficulty in starting his stream, and that it had been small, intermittant, dribbling, and accompanied by a great deal of difficulty. When the stream had stopped, if he waited, he found that he could urinate some more. Although he was a thin individual, he had a rather protuberant abdomen. Examination revealed a sparsely nourished white boy of fourteen years of age. Examination of the head and chest was negative. The abdomen was somewhat prominent especially suprapubically, although he was not distinctly a "pot-bellied" child. Neither kidney was palpable, no tenderness over either kidney. The ureters were not palpable in the flanks. The bladder was quite distended and was percussed three fingers breadths above the symphysis pubis. The genitalia was infantile, penis had quite a long foreskin and a markedly developed frenum. Both testes were descended. Rectal examination revealed an infantile prostate and the base of the distended bladder was easily felt.

An attempt was made to pass a No. 12 sound. This met obstruction after the tip had been felt, per rectum, to have passed beyond the triangular ligament. Since the bladder was so distended, it was considered unwise to suddenly evaculate it. As a result of much manipulation, a No. 7 ureteral catheter was passed into the bladder and, by allowing unrine to escape through this, the bladder was automatically decompressed. He was sent back to the hospital, put to bed, and fluids were forced. Three days after the bladder had been completely emptied, the patient was in excellent condition. A filiform and follower were passed, after the ureteral catheter was withdrawn, and the prostatic urethra was dilated up to 16 F. Following this, a child's cystoscope was introduced into the bladder. Cystoscopy revealed a bladder capacity of 300 cc. Fairly good tonicity. Study of the prostatic orifice revealed a very interesting condition. The internal sphincter of the bladder was extensively dilated, so dilated was it in fact, that one could pull the beak of the cystoscope out into the prostatic urethra and view the verumontanum. At the proximal end of the verumontanum, there was seen the remains of an urethral valve, the edges of which were torn and bleeding. It extended laterally from the proximal tip of the verumontanum to the walls of the prostatic urethera. The torn ends were seen to flap backwards and forward as the cystoscopic fluid was turned on and off. It corresponded to the type of valve described as Iris, that is, those which consist of a diaphram of mucous membrane with a very small opening in its center. Study of the bladder revealed a hypertrophied trigone with a greatly thickened interureteric ligament. Neither ureteral orifice was dilated, the bladder was trabeculated. A soft rubber catheter No. 12 F. was introduced into the bladder and allowed to stay two days

more. At the end of two days, the bladder was filled with 12½% Sodium Iodide and a cystogram was taken. This revealed a dilated bladder with a dilated internal sphincter. The prostatic urethra was also dilated to the region of the internal sphincter. A funnel shaped column of Iodide extended down to the external sphincter, very similar in appearance to that seen in cystograms after supraubic prostatectomy. A phthalein was taken at this time and was surprisingly good. It is as follows:

1st half hour	45%
2nd half hour	15%
3rd half hour	5%
4th half hour	trace
	65%

After allowing the catheter to remain in the bladder for three days more the posterior urethra was dilated up to 18 F. This evidently caused a complete rupture of the valves, for the child, since that time, has been able to pass a free, projectile stream, and has had no further difficulty with urination.

Examination: Examination of the urine when first seen was:
Negative reaction, Spg. 1010, Albumen, negative. Sugar, negative.
Casts, negative, occasional pus cell, many epithelial cells.
Examination of the urine on discharge:
Acid reaction, Spg. 1010, Albumen, negative, sugar, negative, no casts, no pus.

ETIOLOGY

Much has been written concerning the mode of formation of valves of the posterior urethra. The usually accepted theory is that of Watson's who states that they result from a fusion of the verumontanum to the epithelial roof of the posterior urethra in early embryonic life. Three types of valves have been described. However, from a review of the literature, these types are subject to great variation.

SYMPTOM COMPLEX

The symptoms produced by this type of obstruction may be divided under two heads. First, purely obstructive symptoms. Second, symptoms which are due to uremia. The urinary symptoms are those due to vesical neck obstruction. They are, difficulty in starting the stream. The stream is small, dribbling, and intermittent in character, and great difficulty is experienced in completely emptying the bladder. The difficulty may become progressive, and finally result in complete retention. Due to the large amount of residual urine which may accumulate, symptoms of paradoxical incontinence may come on. The child may have continuous dribbling of urine associated with his large protuburant abdomen. Sometimes this dribbling manifests itself only at night and thus results the diagnosis of eneuresis.

The symptoms, due to retention of urinary products in the blood stream, and the resulting uremia are familiar to everyone. They are the same as those seen in the senile individual who has an obstructive prostate, namely, loss of appetite, nausea, vomiting, headache, and finally uremic coma.

DIAGNOSIS

The diagnosis of this condition is not difficult if the physician recognizes its existence and bears it in mind when examining a child who has urinary difficulty or eneuresis. The history is quite important. The child and its parents should be carefully questioned to bring out any history of difficulty in urination usually present from birth. If the child is uremic when seen, this coupled with the history of urinary difficulty, should heighten one's suspicions. If on physical examination one finds an undernourished child with bilateral masses in the region of the kidneys, a suprapubic tumor corresponding to the bladder, in addition to the history of urinary difficulty, the diagnosis is made.

It is interesting to note, as illustrated by the case we are reporting, due to the obstruction being a valve, a catheter may be passed into the bladder, yet when it is withdrawn, the valves come together and still cause obstruction. This explains why a small catheter may pass into the bladder and yet definite obstruction be present. The final diagnosis is usually made by the urologist with the aid of the child's cystoscope, who actually sees the valves open and close with the turning off and on of the cystoscopic media during his examination.

TREATMENT

The treatment of the condition is surgical. The valves may be ruptured by the passage of a sufficiently large sound as illustrated by this case report. They also may be removed by means of a child's punch instrument.

These two above methods are the usual ones employed. However, some cases have been reported in which the valves have been ruptured after doing a suprapubic cystotomy.

CONCLUSIONS

1. We report a case of obstruction to urination in a child, caused by valves in the prostatic urethra, cured by the rupturing of the valves with a sound.

2. Although recognized for well over one hundred years, valves of the prostatic urethra are more generally recognized as a cause of obstruction to urination in children.

3. A careful history and questioning of the parents plus an abdominal examination by the physician should make the diagnosis, which is easily confirmed by the urologist.

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After reading his prepared paper entitled, "Valve Formation of the Posterior Urethra in Male Children as a Cause of Urinary Obstruction," Dr. McKay said:

I realize you are not interested in the details of a discussion of this kind, but I would like to say a few words of the origin and symptoms of the diagnosis of this condition. Valves in young infants, and in children, have been known and accurately described for 135 years. For some unknown reason very little has occurred in the American literature about this condition up to about 1912, when Drs. Knox and Sprunt of the Johns Hopkins Hospital in doing an autopsy on a child discovered this condition. Afterwards Dr. Young and his co-workers at Brady Institute took up the study of congenital valve formation as a possibility of obstruction, and it is due to the work of Dr. Young and his co-workers that I am able to present this subject to you.

The origin of valves in the posterior urethra in babies and children is a rather interesting study in itself. There are several theories advanced. One worker feels that the valve is due to a hypertrophy of the natural elevations and ridges of the posterior urethra.

Another observer thinks that they are due to the remnants of the urogenital membrane, another that it is the result of the remains of the wolffian or malpighian duct. But Watson, working on an embryo fourteen weeks old, studying the verumontanum, found in a cross section made of the verumontanum, three cords extending from the verumontanum to the roof of the posterior urethra. He drew the deduction that the valves were caused by extension back of the verumontanum, an effusion between the colliculus and the epithelium of the roof. Probably no one of these theories is satisfactory to explain all cases, but Watson's work, of which I have a slide and will show you, probably is the most plausible theory.

Very little need be said by me on the symptoms of this condition. We should divide them into two groups; first, symptoms due to the actual obstruction and the result that that obstruction causes to urination. Most of these children are diagnosed as having polycystic kidneys, enuresis, nephritis, and other conditions.

Often, just as in the case of this boy, who was a child of eleven, the father and mother knew nothing about his history. The boy himself, as I just read, gives a straight history of urinary difficulty from infancy.

The other group of symptoms are dependent upon the length of time this obstruction has existed and how complete the obstruction is. If it is complete enough to cause a back pressure, you get an enormously dilated bladder. You get a trigone that extends high up in to the bladder and is hypertrophied. The bladder is a typical picture of a bladder in prostatic obstruction. Of course, the other symptoms are due to retention of the urinary products, if you choose to call it uremia or what not.

The diagnosis of this condition (and I judge this will be the most interesting to you) is quite simple. As I see it, only three conditions in boy babies or children that you might consider as a cause of urinary

obstruction, if you rule out the neurological bladder, occurring chiefly spina bifida occulta, where you have retention of urine, are valve formation, hypertrophy of the verumontanum or some tumor of the prostate. I have personally never seen a verumontanum large enough to cause obstruction. Bugbee and Walstein of New York at the baby hospital in a large number of autopsies report one case which is on record of a large verumontanum in a boy baby which caused complete retention of urine. I have seen one case of a tumor of the prostate in a very small child which did cause obstruction. The diagnosis can be made by you yourselves, after the bladder is properly decompressed, simply injecting any radiographic media into the bladder and the findings are perfectly typical.

The treatment you are probably not interested in. It is surgical in nature and very simple. There are three ways to treat this condition. If it has not gone to an advanced stage, any one of the three is usually successful, simply the passage of a sound carefully in to the bladder, preferably the sound with a window, withdrawing the sound gently, and the valve is engaged in the window of the sound, and being analogous to the valves of the heart, or veins, it is easily torn by this window in the sound.

Dr. Young probably has invented the most ingenious device for the treatment of these valves in children. He uses a punch similar to the prostatic punch made on the French scale for the babies. He introduces the punch into the bladder as you would any sound or cystoscope, and withdraws it. The punch has a cutting chamber inside which he drives home and that snips the obstructing valve off.

Randall of the University of Pennsylvania and Hinman prefer to fulgurate these valves. They introduce the baby endoscope into the posterior urethra and under direct vision fulgurate the valves and burn them off. Any one of the three treatments is apparently successful.

I failed to say, gentlemen, that there are now 62 authentic cases of valve formations in the posterior urethra causing obstruction on record, and a third of these have been treated successfully.

I am sorry you can't see the slides. We have been illustrating the case we are reporting and the other slides are taken from a treatise by Dr. Hugh H. Young and Dr. Robert McKay on this subject which recently appeared in one of the last issues of Surgery Gynecology and Obstetrics. My object in bringing the subject before this section is the fact that I feel like you will see quite a number of obstructions in both male and female children and if you have this condition in mind, you will probably make your own diagnosis.

Before I take my seat, I feel that I want to say that the splendid cooperation and kindness of Dr. McLean and the pediatricians themselves has enabled me to add this case of obstruction of the urinary outflow by a valve to my other cases. (Applause.)

PRESENTATION OF A CASE OF PARTIAL CONTINUOUS EPILEPSY

By Dr. S. F. Ravenel, Greensboro

Mr. Chairman, I am presenting this patient not as a clinic, but because she presents a very unusual lesion which has caused some difficulty in diagnosis. I think it is a very rare condition and I hope that some of you will be able to help in the diagnosis and give some suggestions as to treatment.

This child is nine years old and I first saw her two years ago when she was brought in with a complaint of twitching of the left hand of eighteen months' duration. The family history was entirely negative for insanity, epilepsy, or any chronic familial or hereditary disease. She was delivered by low forceps at term, but was perfectly normal in every respect and there were never any evidences of intracranial injury. Her feeding, development, both physical and mental and dentition were all normal. Her past history was negative except for attacks of tonsilitis prior to a tonsillectomy in January, 1926, and mild attacks of chicken pox and whooping cough in April and May, respectively, of 1926.

Her habits as to eating, sleeping and so forth, were entirely normal. Her mental development was apparently normal. She was in the first grade at seven years of age and was making satisfactory progress.

The tremor of her left hand was first noted in November, 1925, and has been present constantly ever since. The onset of the tremor was evidently sudden, as the mother first noted it when she grasped the child by the hand when shopping in one of the stores down town. The child had had a rather severe attack of tonsilitis some weeks previously, but at no time had there been any cerebral symptoms, muscular twitchings, or evidence of nervous system involvement.

A few weeks after the onset of the tremor, she began to have attacks of spasmodic jerking of the left arm and leg which were followed by weakness on that side of the body and which were preceded by a definite local aura.

There was no loss of consciousness, relaxation of the sphincters, cyanosis or any of the usual accompaniments of a major attack of epilepsy. These attacks have recurred at intervals since, but have gradually become fewer in number. At the height of her trouble, she had as many as five a day, but she has had only four since last August.

The tremor of her left hand, as I say, has been present ever since November, 1925, constantly, in sleep as well as during the waking hours. It is usually intensified by nervousness or fatigue and cannot be stopped by any effort, either mental or physical, on the part of the patient.

The child's mentality, hearing, eyesight, have remained good. There have been no changes in her disposition and in fact outside of the local lesion and occasion attacks of jerking of the left arm and leg, she has been practically a normal child. She has had no headaches, no disturbances of

vision, no parathesias or disturbances of sensation. Her tonsils and adenoids were removed in January, 1926. She has had a rather muffled voice since, probably because of the extensive removal of tonsillar tissue which included some of the adjacent structures. She has received luminal for the last three years and the mother feels that the tremor is more intense and the attacks of jerking of the left arm and leg more frequent when luminal is not used. The physical examination is entirely negative except for the local lesion.

The examination of the eye grounds, of the blood, urine, stool, spinal fluid, blood Wassermann, spinal fluid Wassermann, are all entirely negative. A neurological examination is normal. There are no disturbances of sensation that may be demonstrated. The tremor which you notice is not much to be described, except that it is constantly present. It has never become more extensive than it is now, has never involved any other part of her body and has never been absent since the onset. Under the stress of emotion, the tremor is imparted to the entire hand. When the child is at rest, it is usually confined to the thumb and first two fingers.

The question of diagnosis comes up. An X-ray of her skull and cervical region was negative. There are numerous possibilities to be considered. Progressive muscular atrophy, of course, begins with a tremor or twitching of certain muscle groups, but I don't think this has any feature suggestive of that. Many sequelae follow encephalitis, but usually the spasticity and tremor which follow acute encephalitis are bilateral, relax during sleep or activity and affect those muscles groups which have to do with complicated movements of the body such as facial expression.

Brain tumor I do not believe would remain stationary or be so extremely localized or give no evidence of increased intracranial pressure and maintain only this one constant localized symptom, with the constantly negative physical findings and neurological and eye ground negative examination.

Congenital syphilis, I think, is ruled out by the history, by the lack of physical stigmata, and by the negative examination of the blood and spinal fluid. Cervical rib which might conceivably cause a tremor of certain muscle groups in the hand could be ruled out on account of the absence of objective and subjective sensory changes. In cervical rib when there is motor involvement, there is almost constantly marked spasm and atrophy; also the X-ray is negative.

There is a lesion present, of course—that might be called constant jacksonian epilepsy, but one of the diagnostic points in jacksonian epilepsy is its intermittent character, the intermittent character of attacks. Of course, you might say this is an irritative lesion, probably of the contralateral motor cortex of the brain. There is a clinical entity called partial continuous epilepsy described first by a Russian neurologist and later more fully by other Russian neurologists whose names I will not try to pronounce, and which I believe fits this condition—partial continuous epilepsy. They have described cases of epilepsy in which in the intervals

between attacks a continuous tremor of certain muscle groups develops. This condition has been described since by several American writers, Spiller, Wilson, Winkleman, Burr, and others. In these cases following an acute illness with fever, occasionally with hemiplegia, sometimes with convulsions, a tremor of certain muscle groups begins and is continuous and from time to time following, there are either major epileptic seizures or attacks similar to those which this child presents, that is, jerking of one side of the body or of one extremity.

Sixty cases of this sort have been reported by one of the Russian clinics. Apparently, the disease is not uncommon in Siberia. It occurs in all walks of life. The etiology is not known in a great many cases. They have ruled out syphilis as a cause by giving many of these patients antiluetic treatment and in almost every case the symptoms were made worse. The Russians are treating many of these extremely localized lesions surgically and they have treated about forty such cases by removal of the affected motor cortex. Their reasoning is that the local lesion produces in the limb almost what amounts to a paralysis and in addition, the major attacks eventually cause some mental deterioration. They reported a cure of the attacks and of the local tremor in about forty per cent of the cases operated upon. In thirty pathological examinations of brain tissue they have reported finding localized infiltration of the motor cortex with round cells—a localized encephalitis, usually microscopic, occasionally macroscopic,—and they claim that this is an infectious process. The cases reported in this country by Spiller, Wilson, Winkleman, and others, were due in some instances to a syphilitic lesion of the brain, to metastatic carcinoma, or to localized encephalitis similar to that reported by the Russians, and in one or two instances to brain tumor, and in one case to a cysticercul, incarcerated in the motor cortex.

I do not present this as a definite diagnosis in this case, but after working on her for a long time, I think she seems to fit more nearly into that picture than into any other. I would be very glad to have anyone examine this child and give some help on the diagnosis or the treatment, or both. (Applause.)

Chairman Elias: Is there any further discussion of this case? If not, will you close the discussion, Dr. Ravenel?

Dr. S. F. Ravenel, (Greensboro): I have no further comment to make, except to emphasize again the duration of this lesion, that it has been present now for four years. The question as to whether or not surgical intervention is justified is a very relative one, I think. Those cases reported by the Russian neurologists on which the operation was done successfully did not have a permanent and complete paralysis of the affected limb. There was permanent spasticity but the limb was able to be used after a period of time to a very definite extent. They assumed that neighboring centers took over the function to a certain extent of the removed cortical centers.

I appreciate Dr. Neueman's contribution to the case. The tuberculin was negative and this lesion has been going on for four years, and the spinal fluid was negative.

CHAIRMAN ELIAS: This closes the scientific part of our program and the business part is next. I will appoint Dr. Keith, Dr. Hunter, and Dr. Butler as a Nominating Committee to present nominations for Chairman for the ensuing year. I will ask that they retire and do this at once.

I will also entertain a motion, if you care to make it, in regard to Dr. Root's paper or the subject which he presented. Dr. Root himself has gone and the gentleman who wanted to make a motion has gone. Is there anyone else?

DR. J. B. SIDBURY, (Wilmington): I will make a motion to adopt Dr. Root's recommendation.

Dr. Root's recommendation was as follows: "I move that this Pediatric Section request the State Board of Health to appoint a committee of three to confer with a similar committee selected from this Section, in order to determine upon the feasibility of employing a whole time pediatrician by the state and that the committee representing this section report upon the success, progress or failure of this undertaking to this section at the ensuing meeting of the State Medical Society."

The motion was seconded by Dr. Brooks and carried.

CHAIRMAN ELIAS: Is there any other business to come before the house?

I will appoint on the Committee for the Award of the Moore County Medical Society Medal, from our Section, Dr. Faison, Dr. Ashe, and Dr. Davison. They will be the committee to report on papers from our Section of the State Medical Society. Is there any further business to come before the Society?

DR. LEROY J. BUTLER, (Winston-Salem): Mr. Chairman, the Nominating Committee would like to present the name of Dr. T. M. Watson for Chairman of this Section.

Dr. Watson is elected Chairman of our Section for next year.

Committee to confer with committee from the State Board of Health: Aldert S. Root, Raleigh, Chairman; B. U. Brooks, Durham; C. R. Bugg, Raleigh.

The meeting adjourned at 5:00 o'clock.

ROSTER OF MEMBERS FOR 1929

BY COUNTIES

NOTE.—Every physician in the state whose name we could secure has had an opportunity to supply correct information as to his name, postoffice, academic and medical education, date of State license and date State Society was joined. A few did not take advantage of the opportunity. Anyone finding an error should report it to the secretary of the society.

ALAMANCE-CASWELL COUNTIES SOCIETY

Name and Address	Licensed	Joined State Society
President: S. A. Malloy, Yanceyville; Ky. School Med., 1897	1898	1903
Secretary: B. B. McDade, Burlington; Univ. of Md	1918	1920
Anderson, Chas. A., (Hon.) Burlington; Coll. P. and S., Balt., 1901	1893	1896
Braddy, Wade Hampton, Burlington; Univ. of N. C., 1909	1909	1913
Brittle, Paul C., Burlington; Univ. Coll. of Med., Richmond, 1907	1907	1910
Brooks, R. E., Burlington; Jeff. Med. Coll., 1920	1920	1922
Carlyle, J. B., Burlington; Jeff. Med. Coll., 1926	1926	1928
Carrington, G. L., Burlington; Johns Hopkins, 1920	1920	1925
Ellington, A. J., Burlington; Columbia Univ., 1915	1915	1917
Goley, Willard Coe, Graham; Univ. of Pa., 1924	1924	1924
Goley, Wm. R., Graham (Hon.); P. and S., Balt., 1885	1885	1893
Gwyn, H. L., Yanceyville; Med. Coll Va., 1923	1923	1925
Harden, Graham, Burlington; Univ. of Pa., 1919	1920	1922
Kernodle, Chas. E., Elon College; Univ. of Md., 1911	1911	1920
McPherson, C. W., Burlington; Univ. of Md., 1910	1910	1912
McPherson, R. G., Saxapahaw; Univ. of N. C., 1908	1908	1909
Montgomery, Harry M., Burlington; N. C. Med. Coll., 1903	1903	1904
Moore, Henry Blanchard, Graham; Jeff. Med. Coll., 1920	1920	1923
Moser, W. D., Burlington; Univ. of N. C., 1910	1910	1910
Pickett, J. A., Burlington, R. F. D. 1; Univ. of Tenn. Coll. of Med., 1894	1894	1904
Scott, S. F., Union Ridge; Univ. of Pa., 1918	1918	1920
Simpson, H. H., Altamahaw; Univ. of Md., 1925	1925	1926
Smith, F. L., Burlington;	.....	1929
Spoon, Charles E., Burlington; Univ. of Tenn., 1907	1914	1920
Spoon, S. C., Graham; Univ. of Md., 1918	1918	1920
Thompson, J. M., Mebane; Univ. of N. C., 1909	1909	1920
Troxler, R. M., Burlington; Univ. of Md., 1914	1914	1915
Tyson, T. D., Mebane; Univ. Coll. of Med., Richmond, 1899	1899	1904
Walker, Walter E., Burlington; Med. Coll. of Va., 1903	1903	1905
Walters, C. M., Burlington; Univ. of Md. and P. and S., Balt., 1908	1908	1909
Warren, R. F., Prospect Hill; Atlanta School of Med., 1911	1911	1919
Wilkins, J. C., Haw River; Univ. of Md., 1911	1911	1920

ANSON COUNTY

President:	.....	.....
Secretary: Jno. E. Hart, Wadesboro; P. and S., Balt., 1897	1897	1904
Allen, Chas. I., Wadesboro; Columbia Univ., Coll. P. and S., 1913	1913	1922
Bennett, Jos. H., Wadesboro; Univ. of Md., 1894	1894	1904
Covington, Platt W., 1479 Hainson St., Salt Lake City, Utah; Univ. of Md., 1908	1908	1914
Davis, J. M., Wadesboro; Columbia Univ., 1913	1913	1920

McGoogan, Benj. J., McFarlan; Univ. of Md., 1912	1912	1923
Ross, Robert D., Wadesboro; N. Y. Univ., 1890	1890	1912
Tice, W. T., Peachland	.....	.....

ASHE COUNTY MEDICAL SOCIETY

President: Thos. J. Jones, Lansing; Lincoln Mem. Univ., 1895	1889*	1895
Secretary:	.....	.....
Blevins, Manly, West Jefferson; P. and S., Balt	1885	1904
Jones, T. Lester, Lansing; Va. Med. Coll., 1909	1909	1917
Ray, R. C., Beaver Creek; Med. Coll. of Va.,1916	1916	1917
Reeves, B. E., West Jefferson; P. and S., Balt., 1891	1891	1924

AVERY COUNTY SOCIETY

President: W. B. Burleson, Plumtree; Univ. of Md., 1915	1915	1916
Secretary: R. H. Hardin, Banner Elk; N. C. Med. Coll., 1914	1914	1919
Proffit, Thos. J., Elk Park; Univ. Louisville Med. Dept., 1903	1903	1914
Sloop, Eustace H., Crossnore; N. C. Med. Coll., 1905, Jeff. Med. Coll., 1908	1905	1909
Tate, W. C., Banner Elk; Tenn. Med. Coll., 1908	1909	1912
Triplett, W. R., Purlear; N. C. Med. Coll., 1914	1915	1920

BEAUFORT COUNTY SOCIETY

President: J. T. Nicholson, Bath; Coll. Phys. and Surgeons, 1885	1885	1885
Secretary: John Cotton Tayloe, Washington; Univ. of Pa. 1922	1924	1925
Bonner, J. B., Washington; Univ. of Md., School of Med. and Coll. P. and S., 1918	1918	1920
Brown, E. M., Washington; Bellevue Hosp. Med. Coll., 1896	1896	1901
Carter, H. W., Washington; Univ. of Va., 1895	1895	1910
Jackson, C. C., Yeatesville; P. and S., Balt., 1893	1893	1896
Nicholson, John L., Washington; Univ. of Md. and Coll. P. and S. 1904	1904	1904
Nicholson, P. A., Washington (Hon.); P. and S., Balt., 1889	1889	1890
Nicholson, Sam T., Washington (Hon.); P. and S., Balt., 1881	1885	1885
Rodman, J. C., Washington (Hon.); Bellevue Med. Coll., 1892	1892	1895
Rouse, Noah, Belhaven	.....	.....
Swindell, Lewis H., Washington; Univ. of Pa., 1916	1916	1919
Tayloe, D. T., Washington (Hon); Bellevue Med. Coll., 1885	1885	1885
Tayloe, D. T., Jr., Washington; Univ. of Pa., 1919	1919	1922
Tayloe, Joshua, Jr., Washington; Univ. of Pa., 1923	1923	1926
Windley, R. E., Washington; Univ. of Md., 1903	.....	1907

BERTIE COUNTY SOCIETY

President:	.....	.....
Secretary: E. P. Norfleet, Roxobel; Va. Med. Coll., 1914	1914	1920
Castelloe, Cola, Windsor; Univ. of Pa., 1917	1917	1926
Evans, L. B., Windsor; Univ. Coll. of Med., 1900	1900	1907
Garris, Frank H., Lewiston; Jefferson Med. Coll., 1912	1912	1918
Sawyer, Charles Judson, Windsor (Hon.); P. and S., Balt., 1895	1895	1897
Smith, Jos. Elmer, Windsor; Med. Coll. of Va., 1921	1921	1922

BLADEN COUNTY SOCIETY

President: E. C. Bennett, Elizabethtown; Med. Coll. Va., 1926	1926	1927
Secretary: E. S. Clark, Clarkton; Med. Coll. of Va., 1914	1914	1915

*Registered.

Bridger, D. H., Bladenboro; Jeff. Med. Coll.,	1922	1925
Bullard, G. F., Elizabethtown; N. C. Med. Coll., 1915	1915	1916
Clark, D. D., Clarkton; Med. Coll. of Va., 1917	1917	1920
Cromartie, R. S., Elizabethtown; N. C. Med. Coll., 1900	1900	1915
Hutchinson, S. S., Bladenboro; N. C. Med. Coll., 1911	1911	1917
Singletary, G. C., Clarkton; Univ. of Pa., School of Med., 1917	1917	1918

BRUNSWICK COUNTY SOCIETY

President: Wm. R. Goley, Shallott; Univ. Coll. of Med., Richmond, 1901	1901	1904
Dickson, M. S., Longwood; Med. Coll. S. C., 1927	1927	1929
Dosher, J. A., Southport	.....	1903
Floyd, A. J., Longwood; Med. Coll. S. C., 1927	1927	1929
Pitcher, George S., Southport; Columbia U., 1889	1927	1928
Roberts, Bryan Nazer, Longwood; Univ. of Md. Sch. Med., 1925	1925	1926

BUNCOMBE COUNTY SOCIETY

President: Wm. P. Herbert, Asheville; Univ. of Va., 1907	1910	1911
Secretary: M. S. Broun, Asheville; Columbia University Coll. of P. S., 1919	1922	1923
Adams, J. L., Asheville; Jeff. Med. Coll., 1910	1910	1913
Alexander, Geo., Asheville; Univ. of Louisville Med. Dept., 1913	1920	1921
Ambler, Arthur C., Ashevile; Jeff. Med. Coll., 1920	1921	1922
Ambler, Chase P., Asheville (Hon.); West. Reserve Univ. School of Med., 1889	1890	1891
Anderson, James G., Asheville; Univ. of N. C., 1906	1907	1910
Archer, Isaac J., Black Mountain; Northwestern Univ. Med. Sch., 1896	1905	1907
Baker, W. E., Arden; Chattanooga Med. Coll., 1908	1915	1916
Battle, Geo. C., Asheville; Univ. of Md., 1912	1912	1912
Beall, L. G., Black Mountain; N. C. Med. Coll., 1906; Univ. of Pa., 1911	1906	1912
Beers, David L., Asheville; Univ. Mich., 1925	1928	1929
Blumberg, Alfred, Oteen; Coll. Sch. Med. Univ. Colo., 1923	1928	1929
Bown, Herbert H., Asheville; Columbus Med. Coll., 1892	1917	1918
Briggs, Henry H., Asheville; Yale Univ. School of Med., 1897	1901	1903
Brookshire, Harley G., Asheville; N. C. Med. Coll., 1905	1905	1907
Brownson, Wm. C., Asheville (Hon.); Univ. of N. Y., 1878	1881	1885
Brownsberger, John F., Asheville; Coll. of Med., Evan. Los Angeles, 1925	1928	1929
Buck, David M., Asheville; Med. Coll. of Va., 1925	1925	1927
Carr, Eugene M., Asheville; Johns Hopkins Univ., 1919	1926	1927
Cheesborough, Thomas P., Biltmore (Hon.); Univ. of N. Y., 1891	1891	1900
Clark, Harold S., Asheville; Univ. of Pa., 1922	1922	1924
Cocke, C. H., Asheville; Cornell Univ. 1905	1912	1913
Cocke, E. R., Asheville; Jeff. Med. Coll., 1913	1914	1917
Cocke, Jere E., Asheville; Louisville Med. Coll., 1905	1905	1907
Colby, C. DeW., Asheville; Univ. of Mich., 1892; Army Med. Sch., 1895	1909	1912
Cotten, Clyde E., Asheville; Univ. of Wooster, 1889	1901	1901
Craddock, Alva B., Asheville; Johns Hopkins, 1918	1923	1924
Crow, S. L., Asheville; Emory Univ., 1925	1926	1927
Denchfield, A. L., Asheville; Univ. N. Y., 1905	1914	1926
Eckel, O. F., Asheville; Med. Coll., of S. C., 1906	1907	1909

Edwards, B. O., Asheville; N. C. Medical Coll., 1905	1905	1909
Edwards, C. P., Asheville; Tenn. Med. Coll., 1900	1903	1921
Elias, Lewis W., Asheville; Columbia Univ. Coll. of P. and S., 1903	1906	1907
Floyd, H. T., Oteen; Johns Hopkins Univ., 1923	1926	1927
Folsom, T. W., Asheville; Univ. of Pa., 1921	1921	1923
Frazer, H. Thompson, Asheville; Columbia Univ. Coll. P. and S., N. Y., 1901	1908	1909
Freeman, Wm. T., Biltmore; Univ. of Ga., 1917	1927	1929
George, John C., Oteen; Miami Med., 1906	1925	1927
Godwin, G. C., Oteen; Med. Coll. Va., 1915	1915	1920
Grantham, Wm. L., Asheville; N. C. Med. Coll., 1906	1906	1911
Greene, Jos. B., Asheville; Univ. of Va., 1893	1910	1911
Greenwood, A. B., Asheville; Johns Hopkins, 1916	1916	1918
Griffin, M. A., Asheville; Jeff. Med. Coll., 1917	1917	1918
Griffin, W. R., Asheville; Jeff. Med. Coll., 1910	1910	1917
Griffith, F. W., Asheville; Johns Hopkins, 1906	1911	1912
Griffith, L. M., Asheville; Johns Hopkins, 1915	1916	1917
Hahn, Milton, Asheville; Johns Hopkins Univ., 1907	1926	1927
Harrison, H. H., Asheville; Jeff. Med. Coll., 1905	1905	1918
Hensley, Chas. A., Asheville; Jeff. Med. Coll., 1917	1917	1927
Hipps, A. G. T., Asheville; Jeff. Med. Coll., 1916	1916	1920
Hollyday, W. M., Asheville; Univ. of Maryland, 1908	1914	1915
Huffines, T. R., Asheville; Indiana Univ. Med. Sch., 1919	1922	1923
Huston, Jno. Walter, Asheville; Rush Med. Coll., 1904	1912	1913
Ingersoll, Louise M., Asheville; Woman's Med. Coll., 1914	1925	1927
Ivey, R. R., U. S. P. H. S., Biltmore; Univ. of Ala., 1909	1921	1921
Jordan, Charles S., Asheville (Hon.); Univ. of N. Y., 1890	1891	1899
King, Edward, Asheville; Harvard, 1917	1921	1922
Kutscher, G. W., Jr., Swannanoa; Univ. of Pittsburgh, 1923	1925	1926
Lindberg, O. S. Candler, Coll. of Med., Evangelists Los Angeles, Cal., 1923	1925	1928
Lord, Marjery J., Montreat; Univ. of Mich., 1916	1918	1918
Love, S. Glenn, Asheville; Univ. of Md., 1914	1927	1928
Lynch, J. M., Asheville; Univ. of Md., 1904	1912	1913
MacRae, J. D., Asheville; Univ. of Nashville, 1897	1899	1920
McCall, A. C., Asheville; Univ. of Md., 1910	1910	1912
McClellan, W. E., Asheville; Toronto Univ., 1904	1926	1927
McCracken, C. M., Fairview; N. C. Med. Coll., 1896	1896	1904
Mears, George A., Asheville; Med. Coll. Syracuse Univ., 1924	1924	1927
Meriweather, Benj. Morsell, Asheville; Univ. of Louisville, 1915	1915	1924
Millander, Chas. W., Asheville; Tulane Univ., 1919	1921	1924
Montgomery, Kenneth E., Asheville; Univ. Louisville, 1917	1920	1927
Morgan, B. E., Asheville; Univ. of Tenn., 1917	1921	1921
Morgan, G. A., Asheville; Univ. of Tenn., 1917	1920	1925
Murphy, Gibbons W., Asheville; Emory Univ., 1923	1923	1927
Norburn, Chas. S., Asheville; Univ. of Va., 1917	1921	1924
Norburn, R. L., Asheville; Vanderbilt Univ., 1925	1925	1927
Ogilvie, Hanson S., Asheville; Med. Coll Va., 1909	1926	1927
Orr, Chas. C., Asheville; Univ. of Md., 1904	1904	1905
Orr, P. B., Asheville; Jeff. Med. Coll., 1901	1901	1904
Parker, Geo. F., Asheville; Univ. of Pa., 1923	1924	1926
Pendleton, Wilson, Asheville; Univ. of Va., 1908	1919	1920
Pritchard, G. L., Black Mountain; Univ. Coll of Med. Richmond, 1913	1913	1926

Reeves, A. F., Asheville; Geo. Washington Univ., 1906	1909	1910
Reeves, R. J., Leicester; Vanderbilt Univ., 1913	1913	1922
Reynolds, C. V., Asheville (Hon.); Univ. of N. Y., 1895	1895	1896
Richardson, F. H., Black Mountain; Cornell Univ. Med. Coll., 1906	1919	1920
Ringer, Paul H., Asheville; Columbia Univ. P. and S., N. Y., 1904	1906	1907
Ross, Geo. Floyd, Asheville; Univ. Penn., 1907	1908	1926
Schaffle, Karl, Asheville; Univ. of Pa., 1907	1926	1927
Schoenheit, E. W., Asheville; Jeff. Med. Coll., 1920	1920	1921
Scott, R. C., Asheville; Jeff. Med. Coll., 1902	1916	1919
Sevier, D. E., Asheville (Hon.); Jeff. Med. Coll., 1895	1895	1899
Sevier, J. T., Asheville (Hon.); Jeff. Med. Coll., 1895	1895	1899
Smith, B. R., Asheville; Jeff. Med. Coll., 1911	1913	1914
Sprinkle, C. N., Weaverville; Jeff. Med. Coll., 1910	1910	1922
Stevens, M. L., Asheville (Hon.); Balt. Med. Coll., 1891	1892	1893
Sumner, Howard L., Asheville; Jeff. Med. Coll.	1926	1929
Tennent, G. S., Asheville (Hon.); N. C. Med. Coll., 1894	1894	1898
Terry, George H. B., Oteen; Jeff. Med. Coll., 1895	1925	1927
Terry, P. R., Asheville; George Washington Univ., 1907	1912	1913
Thompson, A. C., Asheville; Georgetown Univ., 1911	1921	1922
Toole, A. F., Asheville; Univ. of Va., 1900	1917	1918
Wanstrom, Ruth, Asheville; Univ. of Mich., 1918	1920	1926
Ward, John LaB., Asheville; Med. Coll. of S. C., 1905	1921	1922
Watkins, John A., Asheville; Tulane University, 1910	1925	1926
Weaver, H. B., Asheville (Hon.); Washington Univ., Balt., 1872	1881	1882
Weaver, W. J., Asheville; Jeff. Med. Coll., 1898	1897	1915
White, R. A., Asheville; Univ. Cin. Coll. of Med., 1918	1920	1921
Whitehead, S. L., Asheville; Jefferson Med. Coll., 1921	1921	1929
Wier, J. E., Asheville; Indiana University, 1913	1925	1926
Wiest, Paul F., Asheville; University of Md., 1921	1925	1925
Williams, L. L., Asheville; Med. Coll. of S. C., 1880	1924	1927
Willis, A. P., Candler; Univ. of N. C., 1904	1904	1919
Wilson, R. G., Asheville; Univ. of Pa., 1919	1919	1921
Woodward, J. G., Asheville; Univ. of Pa., 1925	1925	1927
Young, J. G., Asheville; Univ. of Tenn., 1926	1926	1929

BURKE COUNTY SOCIETY

President: Jas. J. Kirksey, Morganton; Univ. of Pa., 1921	1921	1923
Secretary: G. M. Billings, Morganton; Tulane Univ. of La., 1919	1919	1920
Kende, Tibor Norbert, Morganton; Royal Hungarian Univ., 1922	1927	1928
Kibler, W. H., Morganton; Univ. of Pa., 1914	1914	1918
Long, Benj. L., Glen Alpine; N. C. Med. Coll., 1913	1913	1914
Long, R. H., Morganton; Jeff. Med. Coll., 1916	1916	1923
McCampbell, John, Morganton (Hon.); Balt. Med. Coll., 1894	1895	1899
Phifer, Edward M., Morganton; N. C. Med. Coll., 1902	1902	1904
Riddle, J. B., Morganton; Vanderbilt Univ., 1898	1904	1904
Taylor, E. H. E., Morganton; Tulane Univ. La., 1924	1924	1925
Vernon, Jas. W., Morganton; Jeff. Med. Coll., 1909	1909	1913
Watkins, F. B., Morganton; Jeff. Med. Coll., 1907	1907	1910

CABARRUS COUNTY SOCIETY

President: John A. Patterson, Concord; Univ. Coll. of Med., Richmond, 1911	1911	1912
Secretary: J. A. Hartsell, Concord; Jeff. Med. Coll., 1912	1914	1916
Bangle, J. A., Concord; N. C. Med. Coll., 1916	1916	1919

Bunn, J. J., Mt. Pleasant; N. C. Med. Coll., 1912	1913	1915
Burleyson, L. N., Cabarrus; Univ. of Md., 1891	1891	1906
Burns, J. E., Concord; Med. Coll. of Va., 1923	1923	1927
Caldwell, D. G., Concord; Univ. of Pa., 1923	1925	1925
Cauble, H. H., Kannapolis; N. C. Med. Coll., 1909	1909	1911
Flowe, R. Frank, Kannapolis; N. C. Med. Coll., 1913	1914	1915
Gouger, Geo. J., Concord (Hon.); Univ. of Md., 1891	1891	1899
Howard, J. R., Concord; Med. Coll. Va., 1924	1924	1925
King, Richard M., Concord; Jeff. Med. Coll., 1903	1903	1907
Lubchenko, N. E., Harrisburg; N. C. Med. Coll., 1915	1915	1916
MacFadyen, Paul R., Concord; Univ. Coll. of Med. Richmond, 1901	1901	1904
Misenheimer, E. A., Concord; Univ. of Md., 1926	1927	1928
Nolan, J. V., Kannapolis; Jeff. Med. Coll., 1921	1921	1922
Pemberton, Wm. D., Concord (Hon.); Univ. of Md., 1887	1887	1887
Rankin, R. B., Concord; Tulane Univ. of La., 1917	1920	1922
Reed, John F., Concord; Univ. of N. Y., 1893	1907	1912
Robinson, E. E., Concord; Med. Coll. of Va., 1927	1927	1929
Smoot, J. E., Concord; Balt. Med. Coll., 1893	1894	1902
Sossoman, J. C., Midland; N. C. Med. Coll., 1915	1917	1918
Stirewalt, Neal, Kannapolis; Univ. of Md., 1909	1915	1927
Wadsworth, Wm. H., Concord; Jeff. Med. Coll., 1913	1913	1913
Whicker, Guy L., Kannapolis; Univ. of Md., 1926	1926	1928
Widenhouse, M. A., Concord; Univ. of Cinn., 1925	1926	1927
Yow, I. A., Concord; N. C. Med. Coll., 1906	1906	1910

CALDWELL COUNTY SOCIETY

President: M. T. Hickman, Hudson; Univ. of Va., 1909	1909	1910
Secretary: Clyde R. Hedrick, Lenoir; Georgetown Med. Sch., 1925	1925	1926
Coffey, Lawrence H., 911 E. Main St., Lakeland, Fla.; Va. Med. Coll., 1906	1906	1913
Corpening, O. J., Granite Falls; Univ. Coll. of Med., Va. 1906	1906	1907
Goodman, A. B., Lenoir; N. C. Med. Coll., 1898	1897	1910
Houck, Albert, Lenoir (Hon.); P. and S., Balt., 1884	1891	1893
Kent, Alfred A., Winter Pk., Fla., (Hon.); Jeff. Med. Coll., 1885	1885	1894
McNairy, Caroline, Lenoir; Woman's Med. Coll., Pa., 1917	1917	1919
Petrie, Rob't. Wm., Lenoir; Univ. of Md., 1903	1903	1903
Rudisill, J. D., Lenoir; Univ. of Md., 1922	1922	1923
Russell, C. R., Granite Falls; Univ. Coll. of Med., Richmond, 1909	1909	1918
White, W. M., Lenoir; Atlanta P. and S., 1899	1899	1905
Wilson, Clarence L., Lenoir; U. S. Grant Univ., 1903	1903	1905

CARTERET COUNTY SOCIETY

President: C. G. Ferebee, Morehead City; Med. Coll. of Va., 1902	1904	1904
Secretary: Francis Edward Hyde, Beaufort; West. Res. Univ. 1920	1925	1926
Bonner, H. M., Morehead City; Med. Coll. of Va., 1897	1897	1918
Bonner, K. P. B., Morehead City; Med. Coll. of Va., 1905	1905	1905
Davis, George, Beaufort; Kentucky School of Med., 1894	1896	1904
Johnson, Otis H., Morehead City	.....	.....
Mason, Manly, Newport; Tulane University, 1924	1924	1925
Maxwell, C. S., Beaufort; Univ. of the South, Sewanee, 1900	1899	1904
Royal, Ben F., Morehead City; Jeff. Med. Coll., 1909	1909	1909
Thompson, S. W., Jr., Morehead City; Med. Coll. Va., 1913	1915	1922
Whitehurst, E. B., Beaufort; Med. Coll. Va., 1915	1917	1920

CASWELL COUNTY SOCIETY—(See Alamance-Caswell)

CATAWBA COUNTY SOCIETY

President: H. C. Menzies, Hickory (Hon.); N. C. Med. Coll., 1894	1894	1899
Secretary: T. C. Blackburn, Hickory; Balt. Med. Coll., 1896	1896	1909
Cochrane, J. D., Newton; Univ. of Md., 1912	1912	1923
Flippin, J. M., Hickory; Coll. P. and S. Md., 1884	1893*	1926
Foard, F. T., Hickory; Louisville Med. Coll., 1886	1886	1904
Fresh, W. M., Hickory	.....	1927
Frye, Glenn R., Hickory; Jeff. Med. Coll., 1921	1921	1923
Hambrick, Robt. T., Hickory; Univ. of Tulane, 1923	1923	1924
Hunsucker, Charle R., Hickory; N. C. Med. Coll., 1913	1913	1915
Long, Fred Y., Catawba; Balt. Med. Coll., 1898; N. C. Med. Coll.,	1898	1898
Long, Glenn, Newton; N. C. Med. Coll., 1912	1912	1915
Menzies, H. H., Hickory; Med. Coll. Va., Richmond, 1923	1923	1926
Norman, J. S., Hickory; P. and S. Balt., 1909	1911	1920
Nowell, S. C., Hickory; Univ. of Pa., 1921	1922	1924
Shuford, Jacob H., Hickory; Uinv. of Mich., 1901	1902	1902
Speas, W. P., Haverford, Pa.; Univ. of Md., 1911	1911	1919
Stillwell, H. C., Maiden; Jeff. Med. Coll., 1925	1925	1927

CHATHAM COUNTY SOCIETY

President: J. D. Edwards, Siler City (Hon.); Louisville Med. Coll., 1887	.....	1894
Secretary: Gyles, Ronald C., Siler City; Jeff. Med. Coll., 1917	1922	1924
Cathell, J. E., Moncure; Univ. of Md., 1899	1902	1906
Chapin, Wm. Burdette, Pittsboro; Univ. of N. C., 1909	1909	1910
Denson, H. A., Bennett; Central Coll. P. and S., Indianapolis, 1887	1913	1913
Fields, Robert M., Goldston;	.....	1911
McBane, T. W., Pittsboro;	.....	.....
Palmer, R. W., Gulf; Louisville Med. Coll., 1890	.....	1891
Thomas, W. C., Siler City; Va. Med. Coll., 1917	1917	1920

CHEROKEE COUNTY SOCIETY

President: S. C. Heighway, Murphy; Med. Coll. of Ohio, 1885	1904	1898
Secretary: Edw. E. Adams, Murphy; Jeff. Med. Coll., 1923	1923	1924
Adams, N. B., Murphy; Tenn. Med. Coll., 1896	1909	1909
Herbert, Fred L., Andrews; Tenn. Med. Coll., 1904	1912	1912
Hill, J. N., Murphy; Univ. of Louisville, 1909	1909	1909
Morrow, Wm. C., Andrews; Atlanta Sch. of Med., 1909	1909	1909
Newman, L. B., Andrews	.....	.....
Tidwell, J. E., Andrews; Chattanooga Med. Coll., 1903	1909	1915
Webb, B. G., Andrews; Louisville Med. Coll., 1885	1885	1885
Young, G. McD., Postell; Lincoln Mem. Univ., 1916	1917	1918

CHOWAN-PERQUIMANS COUNTIES SOCIETY

President:	.....	.....
Secretary:	.....	.....
Brinn, T. P., Hertford; Univ. of Pa., 1923	1923	1927
Cox, Thomas A., Hertford; Univ. of Md., 1892	1907	1918
Davenport, C. A., Hertford; Univ. of Md., 1924	1924	1926
Smith, Robt. W., Hertford; Univ. of Md., 1892	1892	1918

*Registered.

Whichard, M. P., Edenton; Univ. of Md., 1910	1910	1918
Williams, L. P., Edenton; Bellevue Med. Coll., 1918	1919	1921

CLEVELAND COUNTY SOCIETY

President: T. B. Gold, Shelby; N. C. Med. Coll., 1911	1911	1915
Secretary: Sam M. Schenk, Shelby; Univ. of Pa., 1923	1923	1926
Aydlette, Jos. P., Earl; Kentucky University, 1901	1903	1903
Bridges, D. T., Lattimore; Emory Univ., 1926	.....	1927
Ellis, R. C., Shelby (Hon.); Balt. Univ. Med. School, 1886	1889*	1891
Gold, Ben, Shelby; P. and S., Balt., 1920	1920	1922
Hamrick, T. G., Shelby; P. and S., Balt., 1895	1895	1904
Harbison, J. W., Shelby; Johns Hopkins, 1919	1919	1924
Houser, E. A., Shelby; Chattanooga Med. Coll., 1898; Balt. Univ., 1902	1902	1904
Lackey, F. H., Fallston; Univ. of Med., 1915	1915	1920
Lattimore, E. B., Shelby; Bellevue Med. Coll., 1897	1896	1904
Lee, Lawrence V., Lattimore; Emory Univ. School of Med., 1894	1897	1904
Lockey, W. J., Cherryville; Va., Medical College, 1928	1928	1929
Lowrey, Sidney Allen, Knig's Mountain; Univ. Tenn., 1900	1925	1927
Matthews, B. B., Shelby; Med. Coll. of S. C.	1927	1929
Mitchell, W. F., Shelby; Univ. of Md., 1889.	1900	1904
Mitchell, Thos. B., Shelby; U. Pa., 1924	1924	1929
Moore, D. F., Shelby; Jeff. Med. Coll., 1925	1925	1927
Ramseur, W. L., Kings Mountain; Med. Coll. of S. C., 1926	1927	1929
Royster, S. S., Shelby; Tenn. Med. Coll., 1891	1896	1904
Sherrill, H. R., Lawndale, Univ. of Tenn., 1926	1926	1927
Wood, J. W., Boiling Springs; Louisville Med. Coll., 1892	1901*	1900

COLUMBUS COUNTY SOCIETY

President: G. S. Cox, Tabor; N. C. Med. Coll., 1911	1911	1914
Secretary: Floyd Johnson, Whiteville; Memphis Hosp. Med. Coll., 1903	1903	1904
Baggett, Leaman, Whiteville; N. C. Med. Coll., 1907	1907	1909
Barefoot, Graham B., Chadbourn; Jeff. Med. Coll., 1923	1923	1924
Crowell, W. H., Whiteville; Univ. of Md., 1895	1895	1908
Elliott, G. D., Fair Bluff; Univ. of Pa., 1923	1923	1926
Floyd, L. D., Cerro Gordo; N. C. Med. Coll., 1911	1911	1912
Formyduval, T., Bolton; Va. Med. Coll., 1919	1920	1922
Moore, T. V., Acme; Balt. Med. Coll., 1901	1901	1911
Rozier, R. G., Cerro Gordo; Univ. of Md., 1899	1899	1904
Sadler, R. C., Vineland; N. C. Med. Coll., 1912	1912	1915
Smith, W. F., Chadbourn; N. C. Med. Coll., 1904	1904	1905
Whitaker, R. B., Whiteville; Univ. Coll. of Med., Richmond, 1912	1912	1913
Williams, Wm. Norman, Tabor; Med. Coll. of Va., 1924	1924	1925

CRAVEN COUNTY SOCIETY

President: Joseph R. Latham, New Bern; Jeff. Med. Coll., 1917	1917	1923
Secretary: E. L. Bender, New Bern; Med. Coll. Va., 1916	1916	1925
Ball, M. W., New Bern; Atlanta Sch. of Med., 1909	1909	1913
Barker, Christopher S., New Bern; Jeff. Med. Coll., 1909	1909	1924
Daniels, R. L., New Bern; Med. Coll. of Va., 1912	1912	1919
Duffy, R. N., New Bern; Johns Hopkins, 1906	1907	1908

*Registered.

Duffy, Leinster, New Bern; P. and S. Baltimore, 1889	1888	1888
Duguid, Jos. W., Dover; N. C. Med. Coll., 1905	1905	1912
Ford, D. E., New Bern; Univ. of Mich., 1908	1925	1924
Gibbs, N. M., New Bern; Univ. of Md. and Coll. P. and S. Balt., 1896	1895	1897
Jones, R. Duval, New Bern; Univ. of Md., 1896	1897	1897
Patterson, Joseph F., New Bern; Jeff. Med. Coll., 1906	1906	1906
Pollock, Raymond, New Bern; Jefferson Med. Coll., 1897	1900	1900
Wadsworth, H. B., New Bern; Johns Hopkins, 1918	1918	1923

CUMBERLAND COUNTY SOCIETY

President: J. N. Robertson, Fayetteville; Med. Coll. of Va., 1923	1923	1924
Secretary: O. L. McFadyen, Fayetteville; N. C. Med. Coll., 1912	1912	1912
Allgood, R. A., Fayetteville; Univ. of Md. and Coll. of P. and S., Balt., 1912	1915	1917
Averitt, K. G., Cedar Creek; Balt. Med. Coll., 1893	1893	1902
Boker, David, Fort Bragg	.....	.....
Boyer, Maj. Gouveneur H., Fort Bragg; Amherst Coll., 1903	.....	1927
Chester, P. J., Fayetteville; N. C. Med. Coll., 1913	1913	1920
Coats, Maj. Edward A., Jr., Fort Bragg; Tufts College, 1911	.....	1927
Currie, D. S., Parkton; N. C. Med. Coll., 1906	1906	1907
Highsmith, J. D., Fayetteville; Jeff. Med. Coll., 1918	1918	1920
Highsmith, J. F., Fayetteville (Hon.); Jeff. Med. Coll., 1889	1889	1893
Highsmith, J. F., Jr., Fayetteville; Univ. of Pa., 1927	1927	1929
Highsmith, Seavy, Fayetteville; Univ. Coll. of Med., Richmond, 1901	1901	1902
Jordan, Wm. S., Fayetteville; Univ. of N. C., 1906	1906	1907
Kirksey, W. A. Hope Mills; Washington Univ., 1921	1921	1924
Lilly, James M., Fayetteville; Univ. Coll. of Med., Richmond, 1903	1903	1904
McKay, W. P., Fayetteville; Tulane Univ., 1916	1916	1921
Olive, P. W., Fayetteville; P. and S., Balt., 1907	1907	1909
Powell, Wm. H., Jr., Fayetteville; Med. Coll. Va., 1927	1927	1929
Rainey, W. T., Fayetteville; Univ. Coll. of Med., Richmond, 1913	1913	1916
Shaw, J. A., Fayetteville; Univ. Pa., 1923	1923	1926
Verdery, W. C., Fayetteville; Univ. of Ga., 1915	1920	1921

CURRITUCK COUNTY SOCIETY

President:	.....	.....
Secretary:	.....	.....
Griggs, W. T., Poplar Branch; Univ. of Va., 1896	1896	1901

DAVIDSON COUNTY SOCIETY

President: Jacob L. Sowers, Lexington; Univ. of Md., 1921	1921	1924
Secretary: Grover C. Gambrell, Lexington; Univ. of Ga., 1912	1923	1924
Clyatt, Claude Eugene, Denton; Univ. of Ga., 1911	1923	1924
Farrington, R. K., Thomasville; Univ. Cinn., 1925	1925	1927
Hill, W. Lee, Lexington, Rt. 4; P. and S., Balt., 1893	1893	1904
Hobgood, J. E., Thomasville; Jeff. Med. Coll., 1907	1907	1917
Hunt, W. Bryce, Lexington; Univ. of Md., 1923	1923	1924
Jennings, R. G., Thomasville; N. C. Med. Coll., 1913	1913	1920
Lancaster, F. J., Lexington; Jeff. Med. Coll., 1922	1922	1924
Mock, Frank Lowe, Lexington, Rt. 3; N. C. Med. Coll., 1908	1908	1911
Phillips, C. H., Thomasville; Balt. Univ. School of Med., 1892	1893	1911
Sharpe, C. R., Lexington; Jeff. Med. Coll., 1914	1914	1917

Smith, J. A., Lexington; N. C. Med. Coll., 1915	1915	1917
Smith, William Gordon, Thomasville, Tulane Univ., 1927	1927	1928
Terry, J. R., Lexington; Univ. of Louisville, 1911	1912	1912
Vestal, Willis J., Lexington (Hon.); P. and S., Balt., 1883	1889*	1893
Yokeley, R. V., Thomasville; N. C. Med. Coll., 1911	1911	1912

DAVIE COUNTY SOCIETY

President: W. C. Martin, Mocksville; P. and S., Balt., 1888	1888	1904
Secretary: A. B. Byerly, Cooleemee; Univ. College of Med., Richmond, 1896	1896	1904
Harding, S. A., Mocksville; N. C. Med. Coll., 1910	1910	1913
Martin, Lester P., Mocksville; Jeff. Med. Coll., 1920	1920	1921
Rodwell, Jno. W., Mocksville (Hon.); P. and S., Balt., 1895	1895	1896

DUPLIN COUNTY SOCIETY

President: J. W. Farrior, Warsaw; Univ. of Pa., 1912	1913	1917
Secretary: J. W. Straughan, Warsaw; Med. Coll. of Va., 1924	1924	1925
Carroll, Jno. William, Wallace; Univ. of Maryland, 1903	1903	1903
Kennedy, Geo. W., Beulaville; Univ. Coll. of Med., Rich., 1898	1897	1909
Landen, Jefferson F., Chinquapin; Univ. Coll. of Med., Richmond, Va., 1905	1905	1907
Maxwell, J. F., Kinston	1889*	1917
Morton, J. X., Faison; N. C. Med. Coll., 1915	1915	1922
Quinn, Robert F., Magnolia; N. C. Med. Coll., 1912	1913	1916
Robinson, J. D., Walace; Univ. of Md., 1915	1915	1917
Williams, Jas. M., Warsaw; Univ. of Md., 1902	1902	1902
Williams, R. C., Wallace; Univ. of Md., 1912	1915	1916

DURHAM-ORANGE COUNTIES SOCIETY

President: W. B. McCutcheon, Durham; Med. Coll., Va., 1921	1921	1924
Secretary: Robert A. Ross, Durham; Univ. of Pa., 1922	1922	1925
Abernethy, E. A., Chapel Hill; Univ. Coll. of Med., Richmond, 1901; Geo. Wash. Univ., 1903	1901	1914
Adams, C. A., Durham; P. and S., Balt., 1892	1892	1901
Adkins, M. T., Durham; Johns Hopkins, 1907	1915	1916
Anderson, W. B., Durham; Johns Hopkins, 1924	1927	1927
Bass, H. H., Durham (Hon.); Univ. Coll. of Med., 1899	1899	1900
Baynes, R. H., Durham; Univ. of Md., 1914	1914	1920
Bitting, Numa D., Durham; Jeff. Med. Cell., 1907	1907	1909
Boddie, Needham P., Durham (Hon.); P. and S., Balt., 1883	1883	1883
Booker, Lyle S., Durham; Va. Univ. Med. Coll., 1908	1910	1911
Boone, W. H., Durham; N. C. Med. Coll., 1902	1902	1910
Boone, W. W., Durham; Jeff. Med. Coll., 1923	1923	1925
Bowles, Francis N., Durham; Med. Coll of Va., 1924	1924	1926
Britt, T. C., Durham; Jeff. Med. Coll., 1921	1921	1925
Brinkley, H. M., Durham; Jeff. Med. Coll., 1919	1919	1923
Brooks, B. U., Durham; Univ. of Md., 1905	1905	1907
Bullitt, J. B., Chapel Hill; Univ. of Va., 1897	1914	1915
Campbell, A. S., Durham; Chicago Coll. Med., and Surg., 1917	1923	1924
Chiles, George G., Durham;	.....	.....
Coppridge, W. M., Durham; Jeff. Med. Coll., 1918	1919	1920
Darden, O. B., Westbrook Sanatorium, Richmond, Va., Med. Coll. of Va., 1918	1920	1920

*Registered.

Davison, Wilburt C., Durham; Johns Hopkins, 1917	1927	1927
Fassett, Burton W., Durham; Balt. Med. Coll., 1898	1899	1909
Felts, Robert L., Durham; Univ. of Md., 1898	1899	1909
Goudge, Mabel E., West Durham; Ohio State Univ., 1922	1925	1927
Hardee, W. P., Durham; Jeff. Med. Coll., 1912	1912	1924
Hayes, R. B., Hillsboro; Univ. of Md., 1906	1910	1917
Hicks, Calvin S., Durham; Univ. of Md., 1904	1904	1904
Holloway, Joseph C., Durham	.....	.....
Holloway, O. W., Durham; Med. Coll. of Va., 1901	1901	1917
Johnson, N. M., Durham (Hon.); Wash. Univ. Sch. of Med., 1877	1889	1879
Kerns, T. C., Durham; Univ. of Pa., 1911	1911	1912
Lawson, R. B., Chapel Hill; Univ. of Va., 1903	1915	1920
Lloyd, B. B., Chapel Hill; Univ. of N. C., 1909	1909	1914
MacNider, Wm. deB., Chapel Hill; Univ. of N. C., 1903	1903	1903
McPherson, S. D., Durham; Univ. of Md., 1903	1903	1912
Manning, I. H., Chapel Hill; Long Island Coll. Hosp., N. Y., 1897	1899	1901
Manning, Jno. M., Durham (Hon.); Bellevue Med. Coll., 1882	1884	1884
Markham, Blackwell, Durham Harvard Med. Coll., 1922	1922	1925
Montague, S. J., Durham; Bellevue Hosp. Med. Coll., 1872	1880	1922
Nichols, Rhodes E., Durham, Rt. 8; Va. Med. Coll., Rich., 1890	1890	1904
Patrick, J. E., Bahama; Univ. Coll. of Med., Va., 1900	1900	1917
Perry, D. R., Durham; Jeff. Med. Coll., 1919	1919	1922
Powell, Albert H., Durham; Univ. of Ga., 1924	1925	1925
Riggsbee, A. E., Durham; Univ. of N. C., 1909	1909	1911
Roberson, Foy, Durham; Jeff. Med. Coll., 1909	1909	1912
Roberson, Mike, Durham; Tulane Univ., 1912	1912	1913
Roberts, B. W., Durham; 1924	1924	1927
Ross, George H., Durham; Univ. Tenn., 1899	1899	1904
Schuler, J. E., East Durham; Med. Coll. of Va., 1914	1920	1922
Smith, Annie T., Durham; Univ. of Ill., 1923	1925	1926
Smith, Fitzhugh Lee, Bahama;	.....	1928
Speed, J. A., Durham; Jeff. Med. Coll., 1914	1914	1916
Spikes, N. O., Durham;	1924	1927
Stanford, Lois Foote, Durham; Univ. of Pa., 1921	1923	1924
Stanford, W. R., Durham; Univ. of Pa., 1919	1919	1923
Stoner, I. J., West Durham; Memphis Med. Coll., 1898	1921	1922
Strowd, W. A., Durham; Univ. of N. C., 1909	1909	1926
Sweaney, H. M., Durham; Univ. of Pa., 1919	1919	1920
Toy, Calvert R., Chapel Hill; Univ. of Pa., 1923	1923	1926
Tyler, E. R., Durham	.....	1927
Upchurch, R. W., Durham; Univ. of Va., 1925	1925	1927
Watkins, G. T., Durham; Jeff. Med. Coll., 1915	1915	1917
Watkins, W. M., Durham; Jeff. Med. Coll., 1923	1923	1925

EDGECOMBE COUNTY SOCIETY

President: Julian Meredith Baker, Tarboro (Hon.); Univ. of Md., 1879	1879	1879
Secretary: R. E. Broadway, Tarboro; Med. Coll. of S. C., 1911	1923	1926
Bass, Spencer P., Tarboro; Univ. of Va., 1906	1907	1909
Harrell, Samuel N., Tarboro; Univ. of Md., 1897	1897	1904
Norfleet, A. C., Tarboro;	.....	1927
Thigpen, William J., Tarboro; Jeff. Med. Coll., 1900	1900	1901
Wooten, Amos Monroe, Pinetops; Univ. of N. C., 1910	1910	1911

FORSYTH COUNTY SOCIETY

President: T. C. Redfern, Winston-Salem; L. I. Med. Coll. Hosp., 1916	1921	1921
Secretary: Sprunt, W. H., Jr., Winston-Salem; Univ. of Pa., 1918	1918	1925
Ashburn, C. W., Winston-Salem; Wash. Univ., 1927	1927	1928
Benbow, J. T., Winston-Salem; N. C. Med. Coll., 1910	1910	1920
Bowers, M. A., Winston-Salem; Tulane Univ., 1911	1911	1914
Butler, Leroy J., Winston-Salem; Med. Coll. of Va., 1915	1920	1921
Bynum, John, Winston-Salem (Hon.); Univ. of N. Y., 1892	1892	1893
Casstevens, J. C., Clemmons; Va. Med. Coll., 1926	1926	1927
Cooke, G. C., Winston-Salem; Univ. of Md., 1919	1919	1920
Couch, V. F., Winston-Salem; P. and S., New York, 1911	1911	1919
Craig, S. D., Winston-Salem; Tulane Univ., 1908	1911	1912
Dalton, D. N., Winston-Salem (Hon.); Univ. of N. Y., 1881	1885	1885
Dalton, Wm. N., Winston-Salem; N. C. Med. Coll., 1904	1904	1905
Daugherty, J. E., Brooklyn, N. Y.; Barnes Med. Coll., 1920	1920	1920
Davis, Thos. W., Winston-Salem (Hon.); S. C. Med. Coll., 1898	1899	1900
Eskew, D. C., Winston-Salem; Univ. of Va., 1924	1924	1928
Gray, Eugene Price, Winston-Salem; Johns Hopkins, 1906	1907	1909
Grimes, W. L., Winston-Salem; Johns Hopkins, 1910	1910	1915
Hege, J. Roy, Winston-Salem; Univ. of Md., 1916	1916	1917
Hurdle, S. W., Winston-Salem; Jeff. Med. Coll., 1914	1914	1916
Izlar, H. L., Winston-Salem; Med. Coll., S. C., 1915	1916	1916
Johnson, Wingate M., Winston-Salem; Jeff. Med. Coll., 1908	1908	1911
Jones, Beverly N., Winston-Salem; Med. Coll. of Va., 1915	1915	1921
Kapp, Henry H., Winston-Salem; Jeff. Med. Coll., 1901	1901	1904
Keiger, O. R., Winston-Salem; Univ. Coll. of Med., Richmond, 1911	1911	1914
Kerr, Jas. Edwin, Winston-Salem (Hon.); Univ. of Md., 1897	1898	1898
Lawrence, Chas. S., Winston-Salem; Univ. of Ga., 1908	1908	1911
Linville, Aaron Y., Winston-Salem (Hon.); Univ. of N. Y., 1889	1889	1896
Lockett, Everett A., Winston-Salem; Univ. of Pa., 1902	1904	1904
Long, Vann, McKee, Winston-Salem; N. C. Med. Coll. 1906	1906	1911
Moore, R. A., Winston-Salem; N. C. Med. Coll., 1911	1911	1917
Munt, H. F., Winston-Salem; Va. Med. Coll., 1911	1914	1916
Padison, Jno. Robt., Kernersville; Univ. of Md., 1902	1902	1913
Pepper, John Kerr, Winston-Salem; P. and S. Balt., 1907	1908	1908
Perkins, J. R., Winston-Salem; Va. Med Coll., 1904	1910	1917
Pfohl, Samuel F., Winston-Salem (Hon.); Univ. of Pa., 1894	1898	1898
Pool, B. B., Winston-Salem; Jeff. Med. Coll., 1923	1923	1925
Rankin, S. W., Winston-Salem; Jeff. Med. Coll., 1912	1912	1914
Rousseau, J. P., Winston-Salem; Univ. of Md., 1918	1920	1920
Schaub, O. P., Winston-Salem (Hon.); Balt. Med. Coll., 1898	1898	1898
Simmons, R. R., Winston-Salem; Va. Med. Coll., 1917	1923	1924
Slate, John S., Winston-Salem; Univ. Coll. Med. Richmond Va., 1900	1899	1920
Spainhour, Ellis H., Winston-Salem (Hon.); Balt. Med. Coll., 1898	1898	1898
Spencer, Wm. O., Winston-Salem (Hon.); Jeff. Med. Coll., 1891	1891	1894
Strickland, Edward F., Winston-Saalem (Hon.); Univ. of New York, 1887	1887	1893
Summers, Chas. L., Baltimore, Md., (Hon.); Univ. and P. and S., Md., 1887	1892	1896
Tuttle, Reuben G., Winston-Salem; N. C. Med. Coll., 1909	1909	1913
Valk, A. deT., Winston-Salem; Johns Hopkins, 1910	1913	1914

Walker, T. D., Winston-Salem; Univ. of Louisville, 1909	1909	1928
Whittington, Jas. B., Winston-Salem; N. C. Med. Coll., 1911	1911	1913
Wright, O. E., Winston-Salem; Emory Univ., 1924	1924	1928
Wyatt, Wortham, Winston-Salem; Univ. of Pa., 1913	1913	1916
Wylie, W. DeK., Winston-Salem; Univ. of Va., 1924	1926	1928

FRANKLIN COUNTY SOCIETY

President: R. B. Henderson, Franklinton; Univ. of Md., 1884	1884	1904
Secretary: Harry H. Johnson, Louisburg; Coll. of P. and S., Balt. 1915	1919	1919
Burt, S. P., Louisburg; P. and S., Balt., 1896	1896	1904
Johnson, B. C., Bunn; Univ. of N. C., 1909	1909	1910
Newell, J. O., Louisburg; P. and S., Balt., 1910	1910	1912
Perry, A. H., Wood; Univ. of Md. and P. and S., Balt., 1924	1924	1925
Perry, H. G., Louisburg; P. and S., Balt., 1915	1915	1916
Timberlake, C. V., Youngsville; Jefferson Med. Coll., 1915	1915	1922
Timberlake, Richard E., Youngsville; Jefferson, 1908	1908	1910
Winston, A. R., Franklinton; Bellevue Med. Coll., 1899	1899	1900
Yarborough, R. F., Louisburg (Hon.); Geo. Wash. Univ., 1898	1899	1899

GASTON COUNTY SOCIETY

President: Charles H. Pugh, Gastonia; N. C. Med. Coll., 1910	1910	1913
Secretary: R. B. Groves, Lowell; Med. Coll. of Va., 1924	1924	1924
Anderson, James A., Gastonia; Univ. of Georgia, 1904	1909	1909
Anders, McT. G., Gastonia; Md. Med. Coll., 1901	1902	1902
Anthony, J. E., Kings Mountain; Univ. of Tenn., 1911	1911	1911
Belk, Geo. W., Gastonia; Atlanta School of Med., 1913	1918	1924
Blair, J. L., Gastonia; Atlanta Med. Coll., 1915	1920	1921
Boyles, M. F., Dallas; N. C. Med. Coll., 1917	1917	1920
Braswell, William Edgar, Bessemer; Univ. of Ga., 1907	1925	1926
Campbell, J. W., Gastonia; P. and S., Balt., 1893	1919	1920
Clinton, Roland S., Gastonia; Univ. of Md., 1914	1914	1920
Eddleman, Hall M., Gastonia (Hon.); College Phys. and Surg., Balt.	1889	1904
Garrison, D. A., Gastonia (Hon.); Louisville Med. Coll., 1896	1896	1900
Glenn, Lucius N., Gastonia; Univ. of Md., 1897	1897	1904
Hemmingway, J. D., Gastonia;	.....	1929
Hood, J. Sidney, Gastonia; Jeff. Med. Coll., 1907	1907	1910
Hunter, W. B., Cramerton; Univ. of Pa., 1911	1911	1920
Johnson, R. Lee, Gastonia; Jefferson, 1911	1911	1918
Jones, W. M., Gastonia;	.....	.....
Lyday, C. E., Gastonia; Atlanta S. of Med., 1910	1910	1920
McAdams, C. R., Belmont; N. C. Med. Coll., 1912	1912	1916
McChesney, W. W., Gastonia; Med. Coll. Va., 1915	1925	1927
McCombs, C. J., Gastonia; N. C. Med. Coll., 1905	1905	1908
McConnell, H. R., Gastonia;	.....	.....
Miller, Oscar L., Gastonia; Atlanta Coll. of P. and S., 1912	1921	1922
Miller, R. C., Gastonia; N. C. Med. Coll., 1909	1918	1919
Moore, D. B., Mt. Holly; Med. Coll. of Va., 1915	1915	1921
Parks, W. B., Gastonia; Univ. of Md., 1924	1924	1927
Patrick, Geo. R., Jr., Bessemer City; Univ. of Md., 1916	1916	1920
Patrick, L. N., Gastonia; Univ. of Md., 1909	1910	1913
Pressly, J. M., Belmont; N. C. Med. Coll., 1915	1915	1920
Quickel, Thomas C., Gastonia; Tulane Univ., 1900	1899	1904
Reid, James W., Lowell; Jefferson, 1908	1908	1910

Rhyne, Robert Edgar, Gastonia; N. C. Med. Coll., 1907	1907	1908
Roberts, W. N., Gastonia; Tufts 1925	.....	1929
Stokes, P. B., Kings Mountain; Univ. N. C. 1914; Med. Coll Va., 1917	1917	1926
Swann, Jos. F., Gastonia; P. and S., Balt., 1896	1896	1905
Taylor, B. C., Mount Holly; N. C. Med. Coll., 1910	1911	1923

GATES COUNTY SOCIETY

President:	.....	.....
Secretary:	.....	.....
Blanchard, T. W., Hobbsville; Med. Coll. of Va., 1911	1911	1919
Carter, Thomas L., Gatesville; Med. Coll. of Va., 1917	1917	1928

GRANVILLE COUNTY SOCIETY

President: Joseph W. Thompson, Creedmoor; Ky. Univ. Louisville, 1904	1907	1912
Secretary: R. W. Taylor, Oxford; Tulane Univ., 1926	1926	1928
Bradsher, J. S., Stovall; Univ. of Va., 1925	1925	1927
Cannady, Sam H., Oxford; Univ. of Va., 1887	1889	1904
Daniel, N. C., Oxford; N. C. Med. Coll., 1895	1895	1902
Elliott, J. C., Oxford; Univ. Md., 1926	1926	1928
Fitch, W. E., Buffalo Junction; Va., 1891	1891	1927
Hays, B. K., (Hon.) Oxford; Univ. Coll. of Med. Va., 1894	1894	1897
Morris, Joseph A., Oxford (Hon.); Vanderbilt Univ., 1890	1893	1899
Noblin, Roy L., Oxford; Med. Coll. Va., 1924	1924	1924
Sikes, G. T., Creedmoor (Hon.); Univ. of Md., 1883	1884	1884
Taylor, Wm. L., Oxford; Univ. of Va., 1900	1901	1901
Thomas, Wm. N., Oxford; Va. Med. Coll., 1911	1911	1914

GREENE COUNTY SOCIETY

President: Wm. W. Whittington, Snow Hill; Louisville Med. Coll., Coll., 1895	1895	1902
Secretary: W. E. Dawson, Hookerton; Jefferson, 1920	1920	1922
Carroll, F. W., Hookerton; Med. Coll. Va., 1925	1926	1927
Harper, J. H., Snow Hill; Jefferson, 1905	1906	1907
Murphy, W. B., Snow Hill; Univ. Coll. of Med., Va., 1903	1903	1905

GUILFORD COUNTY SOCIETY

President: Jos. L. Spruill, Jamestown; Univ. of Md., 1895	1895	1907
Secretary: C. W. Jennings, Greensboro; Med. Coll. of Va., 1916	1916	1926
Ashworth, W. C., Greensboro (Hon.); P. and S., Balt., 1892	1892	1894
Austin, J. W., High Point; Jeff. Med. Coll., Phila., 1910	1910	1913
Aydlett, H. T., Greensboro; Univ. of Va., 1894	1895	1907
Bailey, C. W., Greensboro;	.....	.....
Banner, A. C., Greensboro; Jeff. Med. Coll., 1920	1920	1922
Banner, Chas. W., Greensboro; Univ. of Md., 1899	1899	1901
Battle, John T. J., Greensboro (Hon.); P. and S., Balt., 1884	1884	1890
Baylis, E. Katherine, Greensboro; Woman's Coll. of Pa., 1926	1927	1928
Beall, Wm. P., Greensboro (Hon.); Jeff. Med. Coll., 1879	1879	1879
Berry, John, Greensboro; Jeff. Med. Coll., 1908	1908	1920
Best, Benj. W., Greensboro; Coll. of P. and S., Balt., 1884	1884	1920
Bonner, O. B., High Point; Univ. of Md., 1917	1920	1921
Bowman, H. P., Greensboro; Univ. of Tenn., 1894	1894	1905
Boyles, J. H., Greensboro; P. and S., Balt., 1903	1903	1904

Brockmann, Harry L., High Point; Univ. of Pa., 1917	1917	1921
Buie, R. M., Greensboro; Jeff. Med. Coll., 1914	1914	1920
Burress, B. A., High Point; Louisville Hospital Med. Coll., 1908	1922	1924
Burrus, John T., High Point (Hon.); Univ. of Md., 1900; Grant Univ. 1902	1898	1898
Cater, C. D., Greensboro; Emory Univ., 1920	1923	1924
Coe, Samuel S., High Point; Univ. Coll. of Med., Va., 1911	1912	1913
Cole, Walter F., Greensboro; Johns Hopkins, 1909	1909	1910
Collings, Ruth M., Greensboro; Univ. of Pa., 1923	1926	1927
Cook, H. L., Greensboro; Jeff. Med. Coll., 1918	1918	1920
Cozart, S. R., Greensboro; Med. Coll. of Va., 1923	1923	1925
Craven, F. C., Greensboro; Univ. of Md., 1913	1913	1914
Crews, N. H. Greensboro; Jeff. Med. Coll., 1914	1914	1916
Davis, P. B., High Point;	.....	.....
Davis, R. B., Greensboro; Med. Coll. of Va., Richmond, 1915	1916	1917
Dees, Ralph Erastus, Greensboro; Univ. of Md., 1906	1908	1909
Dees, Rigdon O., Greensboro; Univ. of Md., 1906	1907	1908
Dick, Julius Vance, Gibsonville; Univ. of N. C., 1907	1907	1908
Dyer, John W., High Point; Univ. of Louisville, 1916	1921	1925
Edwards, V. E., Greensboro; Univ. of Md., 1913	1913	1913
Ferneyhough, W. T., Greensboro; W. of M., 1916	1926	1927
Flagge, Philip W., High Point; Wash. Univ., St. Louis, 1902	1905	1919
Fortune, Alex. F., Greensboro; Univ. Coll. of Med. Va., 1900	1900	1904
Fox, N. A., Guilford College; Univ. of Pa., 1924	1924	1926
Fryar, C. H., Oak Ridge; Med. Coll. of Va.,	1919	1928
Gaw, Lois B., Greensboro; Women's Med. Coll., Balt., 1907	1907	1924
Gilmore, C. M., Greensboro; Med. Coll. of Va., 1925	1925	1926
Glascock, Joy H., Greensboro; Women's Med. Coll. of Balt., 1896	1896	1907
Gove, Anna M., Greensboro (Hon.); Woman's Med. Coll. of New York Infirmary, 1892	1894	1896
Grayson, C. S., High Point; Geo. Wash. Univ., 1906	1907	1908
Gregg, A. D., Liberty; Med. Coll. of S. C., 1913	1927	1928
Groome, J. G., High Point; Univ. of Ohio, 1924	1924	1925
Harden, R. N., Greensboro; Univ. of Pa., 1922	1922	1924
Harrison, Edmund, Greensboro (Hon.); Univ. Coll. of Med., 1896	1900	1900
Harrison, Edward T., High Point; Johns Hopkins Medical School, 1928	1926	1928
Herring, R. A., Greensboro; Tulane, 1905	1923	1924
Hiatt, H. B., High Point; Univ. of Md., 1907	1907	1910
Holt, D. W., Greensboro; Jeff. Med. Coll., 1918	1918	1920
Holt, W. T., McLeansville (Hon.); Univ. of Tenn., 1890	.....	1896
Hudson, C. C., Greensboro; Univ. Coll. of Med. of Va., 1910	1918	1924
Jackson, Walter Leo,. High Point; N. C. Med. Coll., 1911	1911	1913
Jarboe, Parron, Greensboro; Georgetown Univ., 1905	1906	1907
Johnson, Harry L., Greensboro	.....	1927
Jones, Arthur O., Greensboro; Bellevue, 1890	1890	1904
Jones, Wm. M., Greensboro; Univ. of Md., 1903	1903	1903
Jordan, S. R., Pleasant Garden; Med. Coll. of Va., 1899	1918	1928
Julian, Charles A., Greensboro (Hon.); Louisville Med. Coll., 1888	1891	1892
Keiger, James A., Greensboro; Univ. of Va., 1916	1916	1919
Keith, Marion Y., Greensboro; Univ. of Md., 1923	1923	1927
Knight, Wm. P., Greensboro (Hon.); Balt. Med. Coll., 1898	1898	1898
Long, E. F., High Point; Med. Coll. of Va., 1909	1909	1912
Lyday, R. O., Greensboro; Univ. of Pa., 1920	1920	1927

Lyon, B. R., Greensboro; Columbia Univ., 1915	1920	1920
McAnally, Wm. J., High Point (Hon.); Balt. Med. Coll., 1897	1896	1899
McAnally, James McG., High Point; Univ. of Pa., 1927	1927	1927
McCain, Wm. R., High Point; Univ. of Md., 1897	1898	1898
McGee, G. M., Greensboro; Univ. of Pa., 1915	1927	1927
McManus, W. L., Greensboro; Atlanta School of Med., 1906	1912	1913
Mann, I. Thurman, High Point; Jeff. Med. Coll., 1912	1912	1915
Meadows, W. J., Greensboro; Med. Coll. of Ala., 1894	1899	1904
Micheaux, Edward R., Greensboro (Hon.); Univ. of N. Y., 1889	1889	1900
Miles, May S., Greensboro; Laura Mem. Women's Coll. of Med., Cincinnati, Ohio, 1898	1904	1905
Moore, Chas. E., Greensboro; Jeff. Med. Coll., 1907	1907	1910
Mosley, Charles W., Greensboro (Hon.); Balt. Med. Coll., 1893	1893	1896
Ogburn, H. H., Greensboro; Johns Hopkins Univ., 1913	1913	1914
Ownbey, Arthur D., Greensboro; Med. Coll. Va., 1920	1925	1927
Parker, H. R., Greensboro; Univ. of Syracuse, 1923	1924	1925
Pate, J. F., Greensboro; Univ. of Md., and P. and S., Balt., 1908	1908	1915
Patman, W. L., Greensboro; Harvard Med. School, 1921	1926	1927
Patterson, Fred M., Greensboro; Univ. of Pa., 1924	1924	1928
Patton, A. B., Greensboro; Northwestern Univ., 1911	1925	1926
Post, J. J., Greensboro; Columbia Univ., 1919	1925	1926
Ravenel, S. F., Greensboro; Johns Hopkins, 1923	1923	1926
Raymer, J. G., Greensboro; Harvard Medical School, 1925	1928	1928
Reaves, C. R., Greensboro; Univ. of the South, 1906	1913	1913
Reaves, W. P., Greensboro; Univ. of the South, 1903	1905	1907
Reitzel, Claude E., High Point; P. and S., Atlanta, 1902	1902	1902
Rhudy, Booker E., Greensboro; Med. Coll. Va., 1916	1926	1927
Roberson, Charles, Greensboro; Long Island Coll. Hosp., 1897	1897	1901
Saunders, S. Stewart, High Point; Harvard Med. School, 1924	1926	1927
Schoonover, R. A., Greensboro; Baltimore Med. Coll., 1905	1912	1912
Sharpe, F. A., Greensboro; Univ. of Pa., 1916	1916	1920
Sharpe, O. L., Greensboro; Jeff. Med. Coll., 1922	1924	1925
Shelburne, P. A., Greensboro; Univ. of Va., 1927	1928	1928
Shohan, Joseph, Greensboro; Coll. P. and S., Balt., 1901	1914	1924
Shreve, J. R., Brown Summitt; N. C. Med. Coll., 1915	1915	1920
Simmons, L. L., Greensboro; Univ. of Tenn., 1893; Vanderbilt Univ., 1899	1918	1919
Slate, J. W., High Point; Univ. Coll. of Med., Rich., 1900	1899	1925
Smith, Alick T., Greensboro; Med. Coll. of Va., 1908	.....	1913
Smith, Owen, High Point; Jeff. Med. Coll. of Phila., 1904	1905	1917
Spoon, A. O., Greensboro; Univ. of N. C., 1908	1908	1910
Stanton, D. A., High Point (Hon.); Vanderbilt Univ., 1887	1887	1891
Starr, H. F., Greensboro; Jeff. Med. Coll., 1916	1916	1917
Summers, Emmett A., Randleman; Baylor Univ., Texas, 1925	1926	1927
Tankersley, J. W., Greensboro; Jeff. Med. Coll., 1906	1906	1907
Taylor, F. R., High Point; Univ. of Pa., 1913	1913	1915
Taylor, James N., Greensboro; Med. Coll. of Va.,1901	1902	1905
Taylor, Jas. T., Greensboro; Univ. of Mo.; Coll. of P. and S., Balt., 1908	1908	1910
Taylor, S. R., Greensboro; Univ. of Pa., 1921	1921	1924
Taylor, Wesley, Greensboro; U. of Mich., 1899	1925	1926
Thomas, J. G., Greensboro; Med. Coll. Va., 1915	1915	1920
Thompson, C. D., High Point; Univ. of Tenn., 1901	1901	1904
Turner, J. P., Greensboro; Univ. of Md., 1896	1897	1904

Walker, J. B., Gibsonville; Med. Coll. of Va., 1914	1914	1916
Whitaker, A. C., Julian; Univ. of Tenn., 1903	1903	1908
Whittington, Claude, Greensboro;	.....	.....
Wilkerson, C. E., Greensboro; Univ. of Nashville, 1907	1908	1909
Wilson, Albert R., Greensboro (Hon.); Jeff. Med. Coll., 1882	1882	1882
Williams, John D., Guilford Station (Hon.); Vanderbilt Univ., 1898	1898	1898
Wolfe, H. C., Greensboro; Med. Coll. of Va., 1917	1917	1920
Wolff, D. R., Greensboro; Jeff. Med. Coll., 1918	1918	1920
Woodruff, Fred G., High Point; Med. Coll. of Va., 1917	1917	1919
Wyatt, H. L., Greensboro; Med. Coll. of Va., 1916	1924	1925
York, Alexander A., High Point; Chattanooga Med. Coll., 1907	1907	1909

HALIFAX COUNTY SOCIETY

President: B. M. Nicholson, Enfield; Va. Univ. Coll. of Med., 1910	1910	1913
Secretary: Z. P. Mitchell, Weldon; Med. Coll. of Va., 1920	1920	1921
Beckwith, R. P., Roanoke Rapids; Univ. of Pa., 1911	1913	1916
Jarman, F. G., Roanoke Rapids; Univ. Coll. of Med. Va., 1911	1914	1916
Lassiter, H. G., Weldon; Jeff. Med. Coll., 1918	1918	1920
Long, T. W. M., Roanoke Rapids; Univ. Coll. of Med. Va., 1908	1909	1910
McDaniel, L. E., Jackson; Univ. of Md., 1911	1915	1916
Neville, C. H., Enfield; Tulane Univ. 1927	1927	1927
Parker, J. W., Seaboard; Med. Coll. of Va., 1927	.....	1929
Royster, Thomas H., Roanoke Rapids; Univ. Coll. of Med., Richmond, 1908	1908	1914
Seawell, Marion H., Jackson; Med. Coll. of Va.,	1926	1927
Smith, O. F., Scoltand Neck; Univ. Coll. of Va., 1899	1899	1904
Suiter, W. G., Weldon; Med. Coll. of Va., 1917	1917	1920
Thigpen, H. G., Scotland Neck; Jeff. Med. Coll., 1917	1917	1920
Weathers, Bahnson, Roanoke Rapids; Wash. Univ. Med. School, St. Louis, 1917	1921	1922
Whitaker, F. C., Enfield; Md. Med. Coll., 1911	1911	1929

HARNETT COUNTY SOCIETY

Presidents John W. McLean, Godwin, N. C. Med. Coll., 1902	1902	1906
Secretary: A. T. Wyatt, Lillington; Jeff. Med. Coll., 1919	1919	1927
Corbett, Clarence Lee, Dunn; Emory Univ., 1927	.....	1928
Duncan, S. A., Coats; Tulane Univ., 1924	1924	1926
Halford, Jos. W., Lillington; Geo. Wash. Univ., 1904	1905	1905
Hicks, Isham Faison, Dunn; N. C. Med. Coll., 1902	1902	1904
Highsmith, Charles, Dunn (Hon.); Balt. Med. Coll., 1898	1898	1898
Holt, Wm. P., Erwin; Jeff. Med. Coll., 1895	1895	1901
Holt, Wm. P., Jr., Erwin; Jeff. Med. Coll., 1926	1926	1927
McKay, Joseph F., Buies Creek (Hon.); S. C. Med. Coll., 1884	1885	1900
Sexton, C. Hector, Dunn; Univ. of Md., 1890	1890	1904
Martin, J. F., Dunn; N. C. Med. Coll., 1905	1905	1918
Melvin, Wayman C., Linden; Univ. Coll. of Med., Richmond, 1900	1900	1905
Odell, J. W., Dunn;	.....	.....
Parker, Paul G., Erwin; Med. Coll. of Va., 1916	1916	1917

HAYWOOD COUNTY SOCIETY

President: W. C. Johnson, Canton; Tulane Univ. of La., 1912	1912	1917
Secretary: W. L. Kirkpatrick, Waynesville; Univ. Vanderbilt, 1894	1894	1895
Abel, J. F., Waynesville (Hon.); Univ. of Balt., 1892	1892	1899
Allen, Rufus L., Waynesville (Hon.); Univ. of Md., 1885	1885	1889

Brewton, W. A., Canton;	.....	.....
Davis, F. M., Canton; Vanderbilt Univ., 1894	1894	1904
Francis, Wm. G., Waynesville; Jeff. Med. Coll., 1915	1916	1925
McCracken, J. R., Waynesville; N. C. Med. Coll., 1902	1902	1903
Reeves, J. L., Canton;	.....	.....
Russell, Jesse M., Canton; University of Nashville, 1911	1911	1912
Sprinkle, W. M., Waynesville;	.....	.....
Stringfellow, Jas. L., Waynesville; Univ. of Va., 1915	1921	1922
Stringfield, Samuel L., Waynesville; Jeff. Med. Coll., 1905	1905	1907

HENDERSON COUNTY SOCIETY

President: R. C. Sample, Hendersonville; Univ. of Pa., 1915	1915	1919
Secretary: W. O. Allen, Hendersonville; Med. Coll. of S. C., 1925	1926	1926
Brown, J. S., Hendersonville (Hon.); Northwestern Univ., 1893	1894	1895
Cliff, B. F., Hendersonville; Geo. Washington Univ., 1908	1909	1915
Drafts, Andrew B., Hendersonville; Univ. of Va., 1896	1899	1903
Edgerton, Jas. L., Hendersonville (Hon.); Univ. of Md., 1877	1889*	1890
Fauntleroy, Jas. W., Zirconia;	.....	.....
Greenwood, S. E., Fletcher; Tenn. Med. Coll., 1902	1903	1904
Howe, Wm. B. White, Jr., Hendersonville; Med. Coll. of S. C., 1906	1907	1908
Mallet, E. P., Hendersonville; L. I., Coll. Hosp., Brooklyn, 1889	1914	1914
Pate, J. F., East Flat Rock;	.....	.....
Payne, J. W., E. Flat Rock; Med. Coll. Maryland, 1903	1924	1926
Russell, Lloyd P., Fletchers; Univ. Nashville, 1901	1902	1903
Staton, H. V., Hendersonville;	.....	.....
Sumner, Thos. W., Fletchers; Jefferson Med. Coll., 1910	1910	1920
Woodcock, J. H., Hendersonville; Hos. College of Med., 1892	1894	1899

HERTFORD COUNTY SOCIETY

President: W. B. Pollard, Winton; Univ. of Pa., 1899	1903	1905
Secretary: Paul H. Mitchell, Ahoskie; Univ. Coll of Med., Richmond, 1907	1907	1908
Futrell, L. M., Murfreesboro; Va., Med. Coll., 1914	1914	1918
Gary, R. H., Murfreesboro; Coll. of Phys. and Surg., Balt., 1881	1889*	1904
Mitchell, Jesse H., Ahoskie; Coll. of P. and S., Balt., 1879	1889*	1904
Walker, L. K., Ahoskie; Univ. of Md., 1911	1911	1917

HOKE COUNTY SOCIETY

President: R. A. Matheson, Raeford; Jeff. Med. Coll., 1926	1926	1928
Secretary: J. H. Williams, Sanatorium; Jeff. Med. Coll., 1920	1920	1922
Bethune, A. T., Raeford;	.....	.....
Bittinger, S. M., Sanatorium; Geo. Wash. Univ., 1918	1924	1924
Brown, G. W., Raeford; Ky. School of Med., Louisville, 1898	1900	1900
Byerly, Wesley Grimes, Sanatorium; Med. Coll., Richmond, 1924	1924	1925
Geddie, K. B., Sanatorium; Jeff. Med., 1921	1921	1923
Harrington, Carey L., Sanatorium; Univ. of Pa., 1922	1924	1924
Lee, S. E., Sanatorium; Univ. of Md., 1911	1924	1924
McBrayer, L. B., Southern Pines (Hon.); Louisville Med. Coll., 1899	1899	1899
McBrayer, R., New Haven, Conn.; Univ. of Pa., 1916 Wm. Wirt Winchester Hospital.	1916	1917

*Registered.

McCain, P. P., Sanatorium; Unv. of Md., and Coll. P. and S., Balt., 1911	1914	1914
Murray, R. L., Raeford; Univ. of Md., 1923	1923	1925
Yoder, Paul A., Sanatorium; Univ. of Pa., 1923	1923	1925

HYDE COUNTY SOCIETY

President:	.....	.....
Secretary:	.....	.....
Harris, Arthur Graham, Fairfield; Univ. of the South, 1905	190[illegible]	1908

IREDELL-ALEXANDER COUNTIES SOCIETY

President: P. S. Easley, Statesville; N. C. Med. Coll., 1907; Jeff. Med. Coll., 1908	1907	1913
Secretary: Roy C. Tatum, Statesville; Jeff. Med., 1919	1919	1920
Adams, M. R., Statesville (Hon.); Univ. of Md., 1878	1884	1884
Alexander, Jas. M., Statesville; Georgetown Univ., 1925	1926	1927
Anderson, Thos. Eli, Statesville (Hon.); Jeff. Med. Coll., 1878	1879	1879
Bell, A. E., Mooresville; Univ. of Md., and Coll. of P. and S., 1897	1897	1904
Cloninger, L. V., Statesville	.....	1904
Crouch, T. D., Stony Point; N. C. Med. Coll., 1909, and Univ. of Md., 1910	1909	1915
Davis, Jas. W., Statesville; Univ. of Pa., 1913	1913	1915
Gibson, L. O., Statesville; N. C. Med. Coll., 1913	1913	1915
Gilmore, W. D., care of: State Sanatorium, Basin, Wyoming; Univ. of N. C., 1903	1903	1904
Goad, R. R., Statesville; Med. Coll. Va., 1925	1928	1929
Goode, T. V., Statesville; Univ. Coll. of Med., Va., 1912	1912	1916
Herman, Chas. B., Statesville; Jeff. Med. Coll., 1923	1923	1925
Jurney, Peter Claywell, Turnersburg; Med. Coll. of Va., 1901	1901	1904
Lackey, M. A., Mooresville; N. C. Med. Coll., 1917	1923	1924
Leeper, Donald H., Hiddenite; N. C. Med. Coll., 1906	1906	1913
Little, E. E., Statesville; N. C. Med. Coll., 1912	1912	1915
Little, Lonnie M., Statesville; Jeff. Med. Coll., 1925	1925	1927
Long, H. F., Statesville (Hon.); Balt. Med. Coll., 1891	1892	1893
McElwee, Ross S., Statesville; Univ. of Md., 1909	1909	1910
McLaughlin, J. E., Statesville (Hon.); Univ. of Md., 1886	1886	1896
McLelland, W. D., Mooresville; Jeff. Med. Coll., 1913	1913	1917
Mitchell, G. P., Jennings; Jeff. Med. Coll., 1927	1927	1928
Myers, D. L., Jennings; Tulane, 1925	1928	1929
Nicholson, C. R., Statesville; N. C. Med. Coll., 1912	1912	1916
Poston, J. Lewis, Statesville; Jeff. Med. Coll., 1922	1923	1924
Pressly, Jas. L., Statesville; Jeff. Med. Coll., 1925	1925	1928
Price, H. L., Taylorsville;	.....	.....
Rhyne, S. A., Statesville; N. C. Med. Coll., 1915	1915	1920
Sharpe, Frank L., Statesville; Univ. of N. C., 1904	1904	1905
Sherrill, C. L., Statesville; N. C. Med. Coll., 1914	1914	1915
Sloan, A. B., Mooresville; Med. Coll. of Va., 1924	1924	1926
Talley, J. S., Troutman; Univ. of N. C., 1909	1910	1917
Taylor, G. W., Mooresville; N. C. Med. Coll., 1906	1906	1917
Templeton, J. Y., Mooresville; Jeff. Med. Coll., 1912	1913	1927
Thurston, Asa, Taylorsville; Univ. of Md., 1909	1909	1914
Trivette, W. A., Hamptonville; Med. Coll. of Va., 1916	1916	1925
Tygett, G. J., Statesville; Univ. Ill., 1924	1928	1929

JACKSON COUNTY SOCIETY

President: Chas. Z. Candler, Sylva; P. and S., Atlanta, 1901	1901	1904
Secretary: D. D. Hooper, Sylva; Univ. of Med., Va., 1905	1905	1905
Nichols, Alvin A., Sylva; Univ. of Nashville Med. Dept., 1898	1904	1904
Nichols, Asbury S., Sylva; Tenn. Med. Coll., 1906	1907	1913
Van Epp, Owen B., Cashiers; Cleveland-Pulte Med. Coll., 1900	1923	1923
Wilkes, Grover C., Sylva; N. C. Med. Coll., 1916	1916	1920

JOHNSTON COUNTY SOCIETY

President: W. G. Wilson, Smithfield; Jeff. Med. Coll., 1921	1921	1924
Secretary: C. C. Massey, Smithfield; Jeff. Med. Coll., 1923	1923	1925
Aycock, F. M., Princeton; Med. Coll. of Va., 1921	1921	1926
Coleman, G. S., Kenly; Med. Coll. of Va., 1907	1907	1909
Fitzgerald, J. Herbert, Smithfield; Jeff. Med. Coll., 1920	1920	1922
Grady, Jas. C., Kenly (Hon.); Balt. Univ. School of Med., 1887	1887	1890
Hocutt, Battle A., Clayton; Univ. of N. C. School of Med., 1906	1906	1908
McLemore, George A., Smithfield; Univ. of N. C., 1906	1906	1908
Mayerberg, I. W., Selma; Jeff. Med. Coll., 1907	1907	1909
Noble, R. J., Selma (Hon.); Ky. Med. School, 1875	1878	1878
Orr, W. J. B., Smithfield; Univ. of Md., 1920	1920	1922
Parker, G. E., Benson; Coll. of P. and S., Balt., 1886	1889*	1904
Person, J. B., Selma (Hon.); Med. Coll. of Va., 1897	1897	1900
Stanley, John H., Four Oaks; Univ. of N. C., 1904	1904	1906
Stevens, R. S., Princeton; Univ. of N. C., 1905	1905	1907
Surles, J. B., Four Oaks; Jeff. Med. Coll., 1909	1909	1919
Utley, H. H., Benson; Balt. Med. Coll., 1906	1906	1910
Wharton, L. D., Smithfield (Hon.); Tulane Univ., 1893	1893	1894

JONES COUNTY SOCIETY

President: A. F. Hammond, Pollocksville; Univ. Coll. of Med. Va., 1903	1903	1914
Secretary: B. W. Page, Trenton; Tulane Univ., 1909	1909	1919
Bell, J. C., Maysville; P. and S. Balt., 1910	1915	1922

LEE COUNTY SOCIETY

President: Winston Durham Carey, Sanford; Geo. Wash. Univ., 1927	1928	1929
Secretary: Lynn McIver, Sanford; Kentucky Univ., 1901	1902	1902
Blue, Waylon, Jonesboro; Med. Coll. of Va., 1925	1925	1926
Foster, J. F., Sanford; N. C., Med. Coll., 1916	1916	1919
Knight, Floyd L., Sanford; Univ. of Va., 1924	1925	1926
Lutterloh, I. H., Sanford; Vanderbilt Univ., 1890	1894*	1922
Lutterloh, I. Hayden, Jr., Sanford; Jeff. Med. Coll., 1921	1921	1922
Matthews, M. L., Sanford; Univ. of N. C., 1903	1903	1904
Monroe, J. P., Sanford; P. and S., Balt., 1901	1901	1905
O'Briant, A. L., Sanford; Jeff. Med. Coll., 1920	1920	1922
Palmer, R. W., Gulf;	.....	.....
Scott, Charles L., Sanford; Univ. of Md., 1897	1899	1916
Snipes, E. P., Jonesboro (Hon.); Vanderbilt Univ., 1890	1889*	1890
Sowers, Roy G., Jonesboro; Univ. of Md., 1923	1923	1924
Stockton, W. I., Carthage, R. F. D.; Coll of P. and S., Univ. of Md., 1915	1915	1925
Watson, Leon, Broadway; N. C. Med. Coll., 1900	1900	1904

*Registered.

LENOIR COUNTY SOCIETY

President: Paul F. Whitaker, Kinston; Med. Coll. of Va., 1922	1922	1924
Secretary: V. L. Bigler, Kinston; Univ. of Pittsburgh, 1925	1926	1927
Boney, Elwood R., Kinston; Univ. of Pa., 1926	1926	1927
Carr, M. L., La Grange; Med. Coll., Va., 1916	1916	1920
Dixon, Wm. H., Kinston; Med. Coll. of Va., 1901	1901	1901
Hardy, Ira M., Kinston; Med. Coll. of Va., 1901	1902	1902
Lee, Mike, Kinston; Tulane Univ., 1926	1926	1927
Lee, Thos. L., Kinston; Med. Coll., Va., 1926	1926	1927
McCuiston, A. M., Kinston; N. C. Med. Coll., 1911	1911	1917
McGeachy, R. S., Kinston (Hon.); Bellevue Hosp., 1894	1894	1895
Mangum, C. P., Kinston; Jeff. Med. Coll., 1918	1918	1920
Parrott, Albert DeK., Kinston; Univ. Coll. of Med., Va., 1906	1906	1908
Parrott, Jas. M., Kinston (Hon.); Tulane Univ., 1895	1895	1896
Parrott, M. C., Kinston; Tulane Univ., 1917	1917	1919
Parrott, Wm. T., Kinston; Tulane Univ., 1899	1899	1901
Peery, Vance P., Kinston; Med. Coll. of Va., 1916	1917	1917
Sabiston, Frank, Kinston, Univ. of Md., 1918	1919	1926
West, B. C., Kinston; Univ. of Pa., 1924	1924	1926
West, C. F., Kinston; Univ. of Pa., 1917	1917	1920
Woodley, C. B., Kinston; Univ. of N. Y., 1886	1886	1890

LINCOLN COUNTY SOCIETY

President: W. G. Bandy, Lincolnton; Vanderbilt Univ., 1908	1912	1916
Secretary: W. V. Costner, Lincolnton; Jeff. Med. Coll., 1924	1925	.....
Bradford, B. M., Cherryville; N. C. Med. Coll., 1915	1915	1923
Cornwell, A. M., Lincolnton	.....	.....
Crowell, L. A., Lincolnton (Hon.); Balt. Med. Coll., 1892	1892	1898
Edwards, F. D., Lawndale, R. 1; Atlanta Med., 1914	1916	1919
Elliot, W. F., Lincolnton; Pa. Medico-Chir. Coll., 1916	1916	1917
Gamble, J. F., Lincolnton; Univ. of Tenn., 1903	1915	1919
Gamble, J. R., Lincolnton; Univ. of Tenn., 1911	1911	1912
Hoover, C. H., Crouse; Chattanooga Med. Coll., 1900; Balt. Med. Coll., 1903	1903	1903
Jacocks, W. P., New York City; Univ. of Pa., 1911	1911	1913
Kiser, W. C., Lincolnton; Southern Med. Coll., Ga., 1889	1893	1904
Lee, R. E., Lincolnton; Univ. of Md., 1896	1896	1918
Shellum, O. W., Denver; N. C. Med. Coll., 1909	1909	1913

McDOWELL COUNTY SOCIETY

President: John F. Jonas, Marion; Balt. Med. Coll., 1903	1903	1903
Secretary: Guy S. Kirby, Marion; Univ. Coll. of Va., 1897	1896	1903
Ashworth, B. L., Marion (Hon.); P. and S., Balt., 1892	1893	1900
Bingham, Plato, Marion;	.....	1929
Butt, R. B., Marion; Emory Univ., Atlanta, 1920	1920	1921
Johnson, John B., Old Fort; Univ. Louisville Med. Dept., 1905	1914	1914
Justice, Gaston B., Marion; P. and S., Atlanta, 1907	1907	1907
McIntosh, D. M., Old Fort; Med. Coll. of Va., 1904	1907	1909
Miller, J. F., Marion; Med. Chi. Phila., 1906	1915	1919

MACON-CLAY COUNTIES SOCIETY

President: S. H. Lyle, Franklin; Univ. of Nashville, 1883	1881	1882
Secretary: W. A. Rogers, Franklin (Hon.); Univ. of Nashville, 1898	1898	1898
Angel, F., Franklin; Jeff. Med. Coll., 1918	1923	1924

Fouts, J. H., Franklin; Vanderbilt Univ., 1895	1895	1918
Horsley, H. T., Franklin; Balt. Med. Coll., 1907	1915	1918
Williams, N. G., Franklin; Emory University, 1917	1924	1926

MADISON COUNTY SOCIETY

President: Eva M. Locke, White Rock; Univ. of Mich., 1900	1921	1922
Secretary: Harry B. Ditmore, Marshall; Univ. of Pa., 1925	1925	1928
Baird, John Wm., Marshall; Tenn. Med. Coll., 1901	1908	1909
Kimberly, David, Jr., Hot Springs; Univ. of Cinn., 1924	1926	1928
Robinson, Willard F., Mars Hill; Vanderbilt Univ., 1896	1903	1904
Tilson, Jacob Carson, Marshall; Lincoln Memorial Univ., 1892	1885	1904

MARTIN COUNTY SOCIETY

President: Vernon Albert Ward, Robersonville; Jeff. Med. Coll., 1908	1908	1914
Secretary: Wm. E. Warren, Williamston; Nongrad., Univ. N. Y.	1893	1894
Long, Edgar M., Hamilton; Univ. of Md., 1909	1909	1910
Nelson, Robert J., Robersonville (Hon.); Louisville Med. Coll., 1890	1890	1893
Pittman, E. E., Oak City; Med. Coll. of Va., 1919	1919	1920
Rhodes, James S., Williamston; Med. Coll. of Va., 1906	1906	1907
Saunders, Jos. H., Williamston; Univ. Coll. of Med., Va., 1905	1905	1909
Smithwick, James E., Jamesville; Univ. Coll. of Med., 1897	1897	1904
Ward, Jesse E., Robersonville; Univ. of Md., 1904	1904	1905
York, Hugh B., Williamston; P. and S., Balt., 1906	1906	1907

MECKLENBURG COUNTY SOCIETY

President: J. McC. De Armon, Charlotte (Hon.); Univ. of Md., 1886	1886	1887
Secretary: L. C. Todd, Charlotte; Univ. of Mich., 1918	1920	1920
Abernathy, H. N., Charlotte; Louisville Med. Coll., 1894	1894	1899
Alexander, Annie L., Charlotte (Hon.); Women's Med. Coll., Pa., 1884	1885	1885
Alexander, M. Janet, Montgomery, India; Women's Med. Coll., Pa., 1917	1917	1918
Alexander, Jas. R., Charlotte (Hon.); Univ. of Md., 1894	1894	1899
Allan, William, Charlotte; P. and S., Balt., 1906	1906	1914
Andes, George C.,	.....	1929
Ashe, J. R., Charlotte; Columbia Univ., 1911	1915	1915
Austin, D. R., Charlotte; Jeff. Med. Coll., 1917	1917	1918
Barret, H. P., Charlotte; Univ. of Louisville, 1908	1917	1919
Barron, A. A., Charlotte; Vanderbilt Univ., 1909	1910	1910
Biggart, William P., Charlotte; Med. Coll. of State of S. C., 1925	1925	1926
Black, Geo. Wm., Pineville; Med. Coll. of Va., 1924	1924	1925
Blair, Andrew, Charlotte; U. of Pa., 1924	1925	1926
Blalock, B. K., Charlotte; Univ. of Md., 1913	1913	1917
Bost, T. C., Charlotte; Geo. Washington Univ., 1915	1920	1921
Brenizer, A. G., Jr., Charlotte; Johns Hopkins,, 1908, and Univ. of Heidelberg	1911	1911
Britt, C. S., Charlotte; Emory Univ., 1920	1925	1926
Collins, George, Raleigh; Jeff. Med. Coll., 1920	1921	1922
Craven, Thomas, Huntersville; Jeff. Med. Coll., 1917	1917	1918
Craven, W. W., Charlotte; Univ. of Md., 1903	1904	1904
Crowell, Andrew J., Charlotte (Hon.); Univ. of Md., 1893	1892	1894
Davidson, John E. S., (Hon.) Charlotte; Univ. of Md., 1894	1898	1898

Donnelly, J., Huntersville; Univ. of N. C., 1905	1905	1918
Elliott, J. A., Charlotte; Univ. of Mich., 1914	1919	1920
Faison, Yates W., Charlotte; Harvard Univ., 1910	1910	1912
Ferguson, R. T., Charlotte; Univ. Coll. of Va., 1906	1909	1909
Fetner, L. M., Charlotte; N. C. Med. Coll., 1914	1914	1915
Gage, L. G., Charlotte; Univ. of Va., 1915	1921	1922
Gallant, Robert M., Charlotte; N. C. Med. Coll., 1915	1915	1916
Gaul, John Stuart, Charlotte; Medico-Chir., Phila., 1913	1922	1923
Gibbon, James, Charlotte; Jeff. Med. Coll., 1918	1920	1921
Gibbon, Robert L., Charlotte (Hon.); Jeff. Med. Coll., 1887	1887	1888
Graham, Wm. A., Charlotte (Hon.); Columbia Univ., P. and S., N. Y., 1888	1889	1890
Hand, Edgar H., Charlotte; N. C. Med. Coll., 1907	1907	1913
Hart, V. K., Statesville; Univ. of Pa., 1921	1924	1925
Henderson, S. McD., Charlotte; Univ. of Md., 1894	1894	1904
Hipp, Edw. R., Charlotte; Univ. of Va., 1918	1920	1921
Holton, Thos. J., Charlotte; Emory Univ., 1909	1925	1926
Houser, O. J., Charlotte; N. C. Med. Coll., 1914	1914	1916
Hovis, L. W., Charlotte; N. C. Med. Coll., 1904	1904	1906
Hunter, L. W., Charlotte, Route 1, (Hon.); Bellevue Hosp., 1875	1880	1880
Hunter, M. C., Huntersville; Coll. of P. and S., Balt., 1882	1882	1882
Hunter, Myers, Charlotte, Georgetown Univ., 1905	1906	1908
Irwin, Hammer C., Pocatella, Idaho; Univ. of Md., 1905	1908	1916
Irwin, J. R., Charlotte (Hon.); Univ. of Md., 1879	1882	1882
Johnston, J. G., Charlotte; Med. Dept. Vanderbilt Univ., 1899	1913	1916
Kelleher, L. B., Charlotte;	.....	.....
Kelly, Luther W., Charlotte; Univ. of Va., 1924	1926	1927
Kennedy, John P., Charlotte; Jeff. Med. Coll., 1915	1915	1920
King, Parks M., Charlotte; Bellevue Med. Coll., 1902	1902	1904
Lafferty, Robert H., Charlotte; N. C. Med. Coll., 1906	1906	1908
Leinbach, Robt., F., Charlotte; Univ. of Pa., 1907	1907	1910
MacConnell, John W., Davidson; Univ. of Md., 1907	1908	1909
McCoy, Thos M., Charlotte; N. C. Med. Coll., 1905	1906	1910
McFadden, R. H., Charlotte; S. C. Med. Coll., 1912	1927	1927
McGregor, Geo. D., Charlotte; Univ. of Va., 1925	1927	1928
McKay, Hamilton W., Charlotte; N. C. Med. Coll., 1909; Jeff. Med. Coll., 1910	1911	1913
McKay, Robert W., Charlotte;	.....	.....
McKnight, R. B., Charlotte; Univ. of Pa., 1920	1920	1928
McLaughlin, Calvin S., Charlotte; Univ. of Md., 1896	1896	1903
McLean, E. K., Charlotte; Univ., of Texas, 1919	1927	1928
McLeskey, J. H., Charlotte; Univ. of Ga., 1909	1927	1928
McPhail, L. D., Charlotte; Univ. of Md., 1900	1900	1902
McPhaul, W. A., Charlotte; Univ. of Nashville, 1904	1905	1907
Martin, Wm. F., Charlotte; Univ. of. Md., 1920	1920	1923
Matheson, James P., Charlotte; Univ. of Md., 1905	1902	1907
Mathews, Vann M., Charlotte; Univ. of Pa., 1918	1918	1921
Mills, C. H. C., Charlotte; Univ. of Md., 1897	1900	1919
Misenheimer, Charles A., Charlotte (Hon.); N. Y. Univ. Med. Coll., 1882	1882	1882
Misenheimer, Thos. M., Charlotte; S. C., Med. Coll., 1925	1925	1927
Mitchell, Thos. B., Charlotte; Univ. of Pa., 1924	1925	1927
Montgomery, John C., Charlotte (Hon.); N. Y., Univ. Med. Coll., 1891	1891	1895

Moore, Alexander W., Charlotte; Univ. of Va., 1901; Univ. and Bellevue Hosp. Med. Coll., 1902	1912	1913
Moore, Oren, Charlotte; N. C., Med. Coll., 1911	1911	1912
Moore, R. A., Charlotte; Univ. of Pa., 1923	1924	1925
Motley, Fred Elliot, Charlotte; Univ. of Mich., 1922	1926	1927
Munroe, H. Stokes, Charlotte; N. C. Med. Coll., 1902; Jeff. Med., 1903	1902	1904
Munroe, J. P., Charlotte (Hon.); Univ. of Va., 1885	1886	1890
Myers, Alonzo, Charlotte; N. C. Med. Coll., 1911; Bellevue Hosp., Med. Coll., 1916	1911	1920
Myers, John Q., Charlotte; N. C. Med. Coll., 1904	1904	1904
Nalle, B. C., Charlotte; Univ. of Va., 1903	1905	1905
Nance, C. L., Charlotte; N. C. Med. Coll., 1919	1921	1922
Neblett, H. C., Charlotte; Med. Coll. of Va., 1914	1921	1929
Martin, W. F., Charlotte; Univ. of Va., 1890	1891	1919
Newell, Leone B., Charlotte; Univ. of N. C., 1905	1905	1908
Newton, Howard L., Charlotte; Northwestern Univ., 1921	1923	1924
Nisbet, D. Heath, Charlotte; Harvard Med. Dept., 1917	1917	1920
Nisbet, Walter O., Charlotte (Hon.); Med. Coll. of S. C., 1889	1889	1889
Northington, J. M., Charlotte; Med. Coll. of Va., 1905	1909	1909
Patterson, Reid, Charlotte; N. C. Med. Coll., 1912	1912	1913
Peeler, Clarence N., Charlotte; N. C. Med. Coll., 1906	1906	1908
Petteway, George H., Charlotte; N. C. Med. Coll., 1913	1913	1914
Phillips, C. C., Charlotte; N. C. Med. Coll., 1912	1912	1917
Pressly, Geo. W., Charlotte (Hon.); Jeff. Med. Coll., 1892	1895	1896
Query, Richard Z., Charlotte, Route 3; Univ. Coll. of Med., Richmond, 1907	1907	1908
Rankin, Watson S., Charlotte; Univ. of Md., 1901	1901	1901
Ranson, J. Lester, Charlotte; N. C. Med. Coll., 1911	1911	1912
Ray, F. L., Charlotte; Univ. of Va., 1919	1919	1922
Reid, Thomas N., Matthews; N. Y. Univ. Med. Coll., 1891	1891	1904
Richardson, Jas. C., Charlotte; Vanderbilt U., 1920	1920	1922
Ross, Otho B., Charlotte; Univ. of Pa., 1909	1909	1912
Scruggs, W., Marvin, Charlotte; Univ. of Pa., 1914	1914	1920.
Shirley, H. C., Charlotte; Johns Hopkins, 1918	1921	1922
Shull, J. Rush, Charlotte; Univ. of Pa., 1910	1910	1913
Sloan, H. L., Charlotte; Univ. of Pa., 1911	1913	1914
Smith, F. C., Charlotte; Jeff. Med., 1921	1921	1925
Sparrow, Thos. De L., Charlotte; Univ. of Pa., 1920	1920	1923
Squires, Claude B., Charlotte; Jeff. Med. Coll., 1919	1919	1921
Strong, Charles M., Charlotte (Hon.); Univ. of Md., 1889	1889	1898
Sullivan, Claude H., Charlotte; Emory Univ., 1917	1924	1925
Taylor, H. C., Charlotte, Chadwick Sta.; Tenn. Med., 1886	1910	1915
Thompson, S. R., Charlotte; N. C. Med. Coll., 1914	1914	1915
Townsend, M. L., Washington, D. C.; Indiana Med. Coll., 1906	1912	1913
Tucker, John H., Charlotte; Univ. of Va., 1899	1901	1911
Tydeman, F. W. L., St. Louis, Mo.; N. C. Med. Coll., 1912	1912	1918
Wakefield, Harry A., Charlotte; N. C. Med. Coll., 1908	1908	1911
Wannamaker, Edward J., Jr., Charlotte; Univ. of Pa., 1921	1924	1924
Whisnant, Albert M., Charlotte (Hon.); P. and S., Balt., 1893	1893	1899
White, Thomas Preston, Charlotte; Univ. of Pa., 1922	1924	1925
Whitley, Ayer, Matthews; Balt. Med. Coll., 1908	1908	1919
Wingate, G. C., Charlotte; N. C. Med. Coll., 1914	1915	1919
Wishart, Wm. E., Charlotte; N. C. Med. Coll., 1911	1911	1911
Woodruff, Julian S., Charlotte; Univ. of Md., 1920	1920	1923

MITCHELL-WATAUGA COUNTIES SOCIETY

President: C. F. Lambert, Spruce Pine; Jeff. Med. Coll., 1921	1921	1923
Secretary: J. M. Peterson, Spruce Pine; Tenn. Med. Coll., 1902	1918	1921
Gouge, A. E., Bakersville; Med. Coll. of Va., 1917	1917	1920
Hagaman, J. B., Boone, 1915	1915	1915
Hodges, J. M., Boone; Balt. Med. Coll., 1904	1906	1914
Perry, H. B., Boone; N. C. Med. Coll., 1905	1905	1922
Peterson C. A., Spruce Pine; N. C. Med. Coll., 1907	1907	1908

MONTGOMERY COUNTY SOCIETY

President: W. P. Coppedge, Candor;	.....	1910
Secretary: Charles Daligny, Troy (Hon.); Univ. of Paris, 1878	1889	1891
Boyles, A. C., Arcadia; Fla. Univ. of Md., 1887; Balt. Univ. Sch. of Med., 1898	1889	1912
Griffin, H. L., Star; Med. Coll. of Va., 1926	.....	1928
Harris, W. T., Troy; Med. Coll. of ———, 1925	1926	1927
Ingram, Charles B., Mt. Gilead (Hon.); Jeff. Med. Coll., 1886	1886	1892
McMillan, J. M., Candor; P. and S., Atlanta, 1909	1909	1911
Nicholson, N. G., Jr., Mt. Gilead; N. C. Med. Coll., 1917	1917	1920
Rankin, Pressly R., Mt. Gilead; N. C. Med. Coll., 1910	1910	1912
Shamburger, John B., Star (Hon.); Univ. of Md., 1890	1890	1892
Thompson, Alexander Frank, Troy; Med. Coll. of Indiana, 1895	1895	1904

MOORE COUNTY SOCIETY

President: J. W. Dickie, Southern Pines; Jeff. Med. Coll., 1918	1920	1921
Secretary: R. G. Rosser, Vass; N. C. Med. Coll., 1909	1909	1917
Bell, F. O., Aberdeen	.....	.....
Blair, A. McNeil, Southern Pines; Niagara Univ., 1897	1904	1906
Blue, A. McN., Carthage; Tulane Univ., 1915	1916	1917
Boddy, Edmund C., Southern Pines	.....	.....
Bowman, H. E., Aberdeen; N. C. Med. Coll., 1904	1904	1919
Davis, J. Franklin, High Falls; Med. Coll. of Va., 1912	1912	1914
Edwards, E. C., Southern Pines;	.....	1929
Grier, Charles T., Carthage; N. C. Med. Coll., 1910	1912	1913
Lacy, Thomas A., Cameron;	.....	.....
McDonald, Augustus A., Jackson Springs; N. C. Med. Coll., 1905	1907	1912
McDuffiie, W. N., Hemp; Emory Univ. Sch. of Med., Atlanta, 1916	1920	1921
McLeod, A. H., Aberdeen; Balt. Med. Coll., 1896	1896	1904
McLeod, W. G., Southern Pines; Baylor Univ., 1921	1926	1927
Marr, M. W., Pinehurst; Tufts Coll. Med. School, Boston, 1907	1909	1915
Milliken, J. S., Southern Pines; Jeff. Med. Coll., 1915	1915	1916
Mudgett, W. C., Southern Pines; Maryland Med. Coll., 1903	1908	1911
Shields, Henry B., Carthage; Atlanta Med. Coll., 1882	1887	1904
Street, M. E., Glendon; P. and S., Balt., 1893	1893	1902
Symington, John, Pine Bluff	.....	.....
Harper, J. M., Rt. 6, Greensboro;	.....	1929

NASH COUNTY SOCIETY

President: B. C. Willis, Rocky Mount; Med. Coll. of Va., 1909	1916	1916
Secretary: M. L. Stone, Rocky Mount; Univ. of Pa.,	1928	1929
Battle, Ivan Proctor, Rocky Mount; Jefferson Med. Coll., 1904	1905	1914
Boice, E. S., Rocky Mount; Univ. of Pa., 1909	1914	1915
Brantley, Hassell, Spring Hope; Jeff. Med. Coll., 1888	1888	1901

Brantley, J. C., Spring Hope; Jeff. Med. Coll., 1916	1916	1922
Brooks, G. M., Rocky Mount; Jeff. Med. Coll., 1918	1919	1919
Coppedge, T. O., Nashville; Coll. of Phys. and Surg., Balt., 1908	1909	1917
Cutchin, J. Henry, Whitakers; Univ. Coll. of Med., Rich., 1911	1911	1915
Daughtridge, A. L., Rocky Mount; Univ. of Md., 1924	1924	1924
Deans, A. W., Battleboro; Med. Coll. of Va., 1915	1915	1917
Denton, A. L., Castalia; Med. Coll. of Va., 1918	1921	1923
Dixon, W. H., Rocky Mount; Jefferson Med. Coll., 1919	1919	1922
Hines, E. R., Rocky Mount; Med. Coll. of S. C., 1916	1916	1917
Jones, W. S., Nashville;	1927	1927
Kinlaw, Wm. Bernard, Rocky Mount; Univ. of Pa., 1920	1920	1923
Knowles, D. L., Rocky Mount; Univ. of Pa., 1918	1918	1920
Kornegay, Lemual W., Rocky Mount; N. C. Med. Coll., 1906	1906	1914
Lane, John L., Rocky Mount; N. C. Med. Coll., 1906	1906	1914
Looney, J. J. W., Rocky Mount; Univ. of Va., 1909	1919	1919
Lyon, Henry Wise, Rocky Mount; Univ. of Pa., 1918	1919	1920
Martin, J. H., Red Oaks; Univ. of Nashville, 1903	1904	1916
Noell, R. H., Rocky Mount; Univ. of Md., 1916	1916	1920
Perry, E. M., Rocky Mount; P. and S., Balt., 1907	1907	1920
Smith, C. T., Rocky Mount; Univ. of Pa., 1918	1918	1920
Speight, J. A., Rocky Mount; Univ. of La., 1914	1915	1916
Staley, S. Walter, Rocky Mount; Med. Coll. of S. C., 1901	1901	1914
Thorp, A. T., Rocky Mount; Univ. of Pa., 1921	1921	1923
Vann, J. R., Jr., Spring Hope; Jeff. Med. Coll., 1917	1917	1919
Winstead, J. A., Nashville; N. C. Med. Coll., 1914	1916	1916

NEW HANOVER COUNTY SOCIETY

President: D. R. Murchison, Wilmington; Johns Hopkins, 1916	1922	1923
Secretary: A. McR. Crouch, Wilmington; Jeff. Med. Coll., 1916	1916	1918
Bullock, Ernest S., Wilmington; Univ. of Md., 1911	1911	1911
Codington, H. A., Wilmington; Univ. of Md., 1911	1915	1917
Cranmer, J. B., Wilmington; Univ. of N. C., 1905	1905	1907
Elliott, A. H., Wilmington; Jeff. Med. Coll., 1919	1919	1921
Evans, J. E., Wilmington; Univ. of Md., 1916	1916	1916
Farthing, L. E., Wilmington; Univ. of N. C., 1906	1906	1913
Freeman, J. D., Wilmington; Med. Coll., of Va., 1918	1921	1922
Galloway, Walter Curtis, Wilmington (Hon.); Washington Univ., 1874	1880	1880
Green, Thomas M., Wilmington; Univ. of Md., 1901	1901	1904
Hall, James S., Wilmington; Univ. of S. Calif., 1900	1921	1924
Hamilton, John H., Wilmington; Med. Sch. of Harvard, 1916	1926	1926
Harriss, Andrew H., Wilmington (Hon.); Medico-Chir., Phila., 1893	1892	1894
Hoggard, J. T., Wilmington; Univ. Med. Coll., Rich., 1906	1906	1922
Hooper, Joseph W., Wilmington; Univ. of Md., 1909	1912	1919
Jewett, Robert D., Wilmington (Hon.); Univ. of Va., 1888	1890	1890
Johnson, Geo. W., Wilmington; Univ. of Pa., 1920	1920	1921
Koonce, S. Everett, Wilmington (Hon.); P. and S., of Balt., 1896	1896	1900
McMillan, W. D., Wilmington (Hon.); Univ. of Md., 1869	1889*	1892
Mebane, W. C., Wilmington; N. C. Med. Coll., 1905	1905	1916
Moore, W. Houston, Wilmington; Jeff. Med. Coll., 1910	1910	1911
Murphy, John G., Wilmington; Univ. of Louisville, 1903	1903	1905
Nesbitt, Charles T., Wilmington; Baltimore Med. Coll., 1893	1907	1908

*Registered.

Robertson, James F., Wilmington; Univ. of Pa., 1913	1913	1916
Schonwald, John T., Wilmington (Hon.); Long Island Coll., Hosp., 1879	1880	1881
Sidbury, J. B., Wilmington; Columbia Univ., N. Y., 1912	1915	1916
Sloan, D. B., Wilmington; Univ. of Pa., 1914	1914	1920
Slocum, R. B., Wilmington; Johns Hopkins, 1905	1907	1907
Smith, Slade A., Wilmington; N. C. Med. Coll., 1907	1907	1921
Watson, Thomas M., Wilmington; Tulane Univ., 1919	1919	1920
Wessel, John C., Wilmington; Univ. of Md., 1900	1900	1900

NORTHAMPTON COUNTY SOCIETY

Boone, S. B., Jackson; Univ. Coll. of Med., Va., 1911	1911	1921
Fleetwood, Jos. A., Conway; Tulane, 1921	1921	1923
Hodge, A. R., Severn; Med. Coll. of Va., 1925	1925	1926
Lewis, H. W., Jackson (Hon.); Univ. of N. Y., 1877	1889*	1887
Vaughan, J. C., Rich Square; Med. Coll. of Va., 1915	1915	1916
Stancell, W. W., Seaboard; Univ. of Med., Va., 1906	1906	1914

ONSLOW COUNTY SOCIETY

President: Carl W. Sutton, Richlands; Tulane, 1905	1905	1907
Secretary: E. L. Cox, Jacksonville (Hon.); Univ. of Md., 1889	1889	1892
Bryan, Lorenzo D., Sneads Ferry; Tulane, 1910	1910	1911
Henderson, John P., Jacksonville; Va. Med. Coll., 1918	1919	1921
Thompson, Cyrus, Jacksonville; Tulane Univ., 1878	1889*	1905

PAMLICO COUNTY SOCIETY

President: D. A. Dees, Bayboro; Balt. Med. Coll., 1903	1903	1905
Secretary: J. J. Purdy, Oriental; Med. Coll. of Va., 1900	1914	1915
Daniels, O. C., Oriental; Med. Coll. of Va., 1903	1903	1916
McCotter, St. Elmo, Bayboro; P. and S., Atlanta, 1908	1908	1909
Woodard, E. O., Bayboro; Loyola Univ., 1919	1920	1921

PASQUOTANK-CAMDEN-DARE COUNTIES SOCIETY

President:	.....	.....
Secretary:	.....	.....
Fearing, Isaiah, Elizabeth City; P. and S., Balt., 1896	1896	1904
Griggs, John B., Elizabeth City; Univ. of Md., 1892	1892	1904
Hoggard, Wm. Alden, Elizabeth City; Univ. Coll. Med., Va., 1907; Vanderbilt Univ., 1914	1907	1910
Hoyle, Huges B., Manteo; N. C. Med. Coll., 1896	1896	1904
Johnston, W. W., Manteo; N. C. Med. Coll., 1913	1913	1920
Kendrick, R. L., Elizabeth City; Univ. of Va., 1913	1913	1915
Lister, E. W., Weeksville; Med. Coll. of Va., 1896	1896	1916
Newby, G. E., Hertford; Jeff. Med. Coll., 1900	1901	1916
Peters, W. A., Elizabeth City; Med. Coll. of Va., 1915	1915	1916
Saliba, John, Elizabeth City; Univ. of Edinburgh, Scotland, 1893	1914	1914
Stevens, W. L., Shiloh; Univ. of Va., 1912	1912	1914
Walker, H. D., Elizabeth City; Univ. of Md., 1902	1902	1902
Ward, I. A., Elizabeth City; Univ. of N. C., 1907	1907	1915
Williams, Claude B., Elizabeth City; Univ. Coll. of Med., Richmond, 1903	1903	1907

*Registered.

PENDER COUNTY SOCIETY

President:	.....	.....
Secretary:	.....	.....
Taylor, W. I., Burgaw; N. C. Med. Coll., 1902	1904	1905

PERSON COUNTY SOCIETY

President: Austin F. Nichols, Roxboro; Univ. of N. C., 1908	1908	1909
Secretary: Geo. W. Gentry, Roxboro; Univ. of N. C., 1910	1910	1911
Beam, H. M., Roxboro; Columbia Univ., 1918	1918	1919
Love, Bedford E., Roxboro; Univ. of Md., 1904	1904	1905
Merritt, John H., Woodsdale, Rt. 1; Univ. of N. C., 1906	1907	1908
Thaxton, B. A., Roxboro; Jeff. Med. Coll., 1914	1914	1916

PITT COUNTY SOCIETY

President: W. I. Wooten, Greenville; Jeff. Med., 1920	1920	1920
Secretary: J. M. Barrett, Greenville; Univ. of Pa., 1926	1926	1927
Basnight, Thos. G., Stokes; Univ. of Md., 1904	1905	1907
Beasley, E. B., Fountain; Univ. of Pa., School of Med., 1911	1911	1915
Cox, B. T., Winterville; Univ. of Md., 1888	1888	1890
Crisp, S. M., Greenville; Univ. of Pa., 1923	1923	1925
Dawson, Walter W., Grifton; Univ. of Md., 1897	1897	1900
Dixon, G. G., Ayden; Med. Coll. of Va., 1915	1915	1917
Ellen, C. J., Greenville; Univ. Coll. of Med., Rich., 1911	1911	1919
Frizzelle, M. T., Ayden; Univ. Coll. of Med., Richmond, 1907	1907	1909
Futrelle, W. E., Greenville; Jeff. Med. Coll., 1921	1921	1923
Garrenton, Cecil, Bethel; Med. Coll. of Va., 1908	1908	1915
Green, J. C., Greenville; Med. Coll. of Va., 1900	1900	1915
Hooker, J. S., Farmville; Emory Univ., 1923	1923	1924
Joyner, C. C., Farmville	.....	1927
Morrill, D. S., Farmville; Balt. Med. Coll., 1897	1897	1903
Nobles, Jos. E., Greenville; Jeff. Med. Coll., 1899	1899	1902
Pace, K. B., Greenville; Jeff. Med. Coll., 1914	1914	1920
Skinner, Louis Colton, Greenville; Univ. of Md., 1901	1901	1903
Smith, Joseph, Greenville; Med. Coll. of Va., 1914	1916	1920
Smith, R. C., Grifton; Jeff. Med. Coll., 1923	1923	1926
Stone, G. G., Greenville; Univ. of Va., 1926	1927	1929
Thompson, Malcom D., Greenville; Univ. of Pa., 1922	1922	1926
Whitfield, Wm. Cobb, Grifton (Hon.); Univ. of Md., 1884	1884	1884

POLK COUNTY SOCIETY

President: A. J. Jervey, Tryon; Med. Coll. of S. C., 1905	1923	1925
Secretary: E. McQueen Salley, Saluda; Univ. of Md., 1905	1905	1908
Grady, Wm. Earle, Tryon (Hon.); Univ. of Md., and P. and S., Balt., 1894	1895	1899
Lea, J. I., Tryon; Mich. Coll. of Med. and Surg., 1906	1916	1925
Palmer, M. C., Tryon; Med. Coll. of S. C., 1910	1911	1914
Smith, D. L., Saluda and Spartanburg, S. C.; S. C. Med. Coll., 1903	1926	1927

RANDOLPH COUNTY SOCIETY

President:	.....	.....
Secretary:	.....	.....
Barnes, Dempsey, Asheboro; Med. Coll. of Va., 1825	1925	1927
Barnes, Tiffany, Asheboro; Med. Coll. of Va., 1925	1925	1927

Hayworth, C. A., Asheboro; Univ. of Md., 1913	1913	1914
Hubbard, Charles C., Farmer; Jeff. Med. Coll., 1888	1890	1904
Johnson, J. R., Ramseur;	.....	.....
Lambert, W. L., Asheboro; Jeff. Med. Coll., 1921	1921	1923
Myers, R. W., R. 1, Fullers; Chattanooga Med. Coll., 1897	.....	1909
Redding, Alex. H., Cedar Falls (Hon.); Coll. of P. and S., Balt., 1887	1889*	1904
Sumner, G. H., Asheboro; Tulane Univ., 1923	1923	1924
Tate, C. S., Ramseur; Balt. Med. Coll., 1893	1896	1914

RICHMOND COUNTY SOCIETY

President: Wm. Calvin Terry, Hamlet; N. C. Med. Coll., 1911; Univ. of Md., 1912	1912	1914
Secretary: A. C. Everett, Rockingham; Univ. of Md., 1897	1897	1903
Bristow, C. O., Rockingham; Jeff. Med. Coll., 1918	1920	1921
Garrett, F. B., Rockingham; N. C. Med. Coll., 1912	1912	1914
Henry, T. B., Rockingham; Columbia Univ. Coll. P. and S., N. Y., 1917	1920	1921
Howell, W. L., Ellerbe; N. C. Med. Coll., 1910	1910	1911
James, W. D., Hamlet; Jeff. Med. Coll., 1908	1908	1908
Kinsman, Henry F., Hamlet; Univ. of Vermont, 1894	1897	1904
Ledbetter, James McQ., Rockingham; Vanderbilt Univ., 1894	1894	1903
McCreary, A. B., Rockingham; Univ. of Tenn., 1922	1924	1924
McIntosh, W. R., Rockingham; N. C. Med. Coll., 1913	1916	1917
Parsons, W. H., Ellerbe; N. C. Med. Coll., 1916	1916	1919
Teague, S. E., Hamlet; Tulane Univ. of La., 1921	1921	1923
Webb, W. P., Rockingham; Med. Coll. of S. C., 1897	1897	1904

ROBESON COUNTY SOCIETY

President: Henry T. Pope, Lumberton; N. C. Med. Coll., 1894	1893	1902
Secretary: E. L. Bowman, McDonalds; Med. Coll. of Va., 1914	1914	1916
Baker, Horace M., Lumberton; Harvard Med. School, 1917	1919	1919
Beam, R. S., Lumberton; Jeff. Med. Coll., 1912	1912	1915
Britt, J. N., Lumberton; Atlanta Med. Coll., 1914	1923	1924
Brown, J. P., Fairmont; Univ. of Md., 1883	1889*	1893
Carmichael, Thaddeus W., Rowland; Ky. Univ. Med. Dept., 1904	1911	1919
Costner, Thos. F., Lumberton; Jeff. Med. Coll., 1882	1889*	1918
Evans, W. E., Rowland; Med. Coll. of Va., 1894	1894	1904
Hays, A. H., Fairmont; Atlanta Med., 1917	1917	1919
Hodgin, H. H., Red Springs; Univ. of Md., 1905; N. C. Med. Coll., 1906	1906	1907
Holmes, A. B., Fairmont; Jeff. Med. Coll., 1910	1910	1914
Johnson, C. T., Red Springs; Jeff. Med. Coll., 1920	1920	1922
Johnson, Thomas C., Lumberton; Med. Coll. of Va., 1903	1903	1903
McMillan, Benj. F., Red Springs (Hon.); Univ. of Md., 1882	1884	1884
Martin, J. A., Lumberton; Med. Coll. of Va., 1915	1915	1917
Nash, J. Fred., St. Pauls; N. C. Med. Coll., 1914	1914	1916
Reed, D. H., Maxton; Geo. Wash. Univ., 1901	1904	1917
Ricks, Leonard E., Fairmont; Med. Coll. of Va., 1896	1896	1913
Stamps, Thos., Lumber Bridge (Hon.); Univ. of Louisville, 1888	1888	1890

*Registered.

ROCKINGHAM COUNTY SOCIETY

President:		
Secretary: L. L. Anderson, Madison;		
Abernathy, Miles B., Reidsville; N. C. Med. Coll., 1906	1906	1910
Boaz, Thos. A., Stoneville; Coll. of P. and S., Balt., 1892	1892	1905
Carter, P. C., Madison; Univ. of Md., 1916	1916	1920
Casteen, Kenan, Leaksville; Univ. and Bellevue Hosp. Med. Coll., 1918	1919	1921
Cummings, M. P., Reidsville; Jeff. Med. Coll., 1911	1911	1914
Dillard, G. P., Draper; Bennett Med. Coll., 1916	1916	1919
Dixon, Hubert C., Madison; Univ. and Bellevue Hosp. Med. Coll., 1916	1916	1921
Fetzer, P. W., Madison; Univ. of Va. Dept. of Med., 1916	1916	1920
Jett, Samuel G., Reidsville; Univ. of the South, 1903	1908	1911
Johnson, W. A., Reidsville; N. C. Med. Coll., 1907	1909	1910
McBryde, M. H., Reidsville; Univ. Coll. of Med., Richmond, 1901	1901	1904
McGehee, John Wm., Reidsville; Univ. of Md., 1904	1904	1905
Martin, Sydnor L., Leaksville; Balt. Med. Coll., 1892	1892	1904
Matthews, Wm. W., Spray; Chicago Coll. of Med. and Surg., 1913	1915	1918
Ray, John B., Leaksville; Balt. Med. Coll., 1898	1898	1898
Taylor, T. G., Leaksville; Ky. School of Med., 1877	1909	1910
Tuttle, A. F., Spray; N. C. Med. Coll., 1901	1901	1907
Tyner, Carl V., Ieaksville; Univ. and Bellevue Hosp. Med. Coll., N. Y., 1916	1916	1919
Wilson, N. G., Madison; N. C. Med. Coll., 1914	1914	1914

ROWAN COUNTY SOCIETY

President: C. W. Armstrong, Salisbury; Univ. of Md., 1914	1914	1915
Secretary: J. C. Eagle, Spencer; Jeff. Med., 1923	1923	1925
Black, O. R., Landis; N. C. Med. Coll., 1914	1914	1918
Boger, D. T., Rockwell; N. C. Med. Coll., 1906	1906	1921
Boyden, Wm. C., China Grove; N. C. Med. Coll., 1913	1913	1914
Brawley, M. H., Salisbury; N. C. Med. Coll., 1910	1912	1914
Brown, G. A., Mt. Ulla (Hon.); Univ. Coll. of Med., 1897	1897	1898
Busby, Julian G., Salisbury; Univ. of Md., 1904	1904	1905
Choate, Glenn Wm., Salisbury; N. C. Med. Coll., 1909	1909	1909
Choate, J. W., Salisbury; N. C. Med. Coll., 1915	1915	1924
Clement, Edward B., Salisbury; Jeff. Med. Coll., 1906	1906	1913
Council, J. B., Salisbury (Hon.); P. and S., Balt., 1885	1885	1885
Helig, Herman G., Salisbury; Univ. of Md., 1899	1899	1904
Ketchie, J. M., Salisbury; Jeff. Med., 1922	1922	1925
McCutchan, Frank, Salisbury; Univ. of Va., 1920	1927	1928
McKenzie, B. W., Salisbury; Jeff. Med. Coll., 1916	1916	1920
Marsh, Frank B., Salisbury; Jeff. Med. Coll., 1919	1919	1922
Monk, Henry L., Salisbury; Med. Coll. of Va., 1897	1899	1903
Newman, Harold H., Salisbury; Johns Hopkins Univ., 1913	1914	1916
Peeler, John H., Salisbury; Univ. Coll. of Med., Va., 1899	1899	1904
Plyler, R. J., Salisbury; Univ. of Md., 1921	1924	1925
Ramsay, Jas. G., Salisbury; Univ. of Pa., 1922	1924	1924
Seay, T. W., East Spencer; Univ. of Md., 1921	1922	1924
Shafer, Irving E., Salisbury; N. C. Med. Coll., 1914	1914	1914
Sigman, Frederick G., Spencer; Univ. Med. Coll. of Va., 1909	1909	1910
Slate, Wesley C., Spencer; Univ. of Tenn., 1903	1903	1913

Spencer, Frederick B., Salisbury; Univ. of N. C., 1909	1909	1911
Stokes, Jas. Ernest, Salisbury; Univ. of Md., 1892	1900	1901
Summerell, E. M., China Grove (Hon.); Univ. of Pa., 1883	1883	1883
Van Poole, C. M., Salisbury (Hon.); P. and S., Balt., 1880	1880	1880
West, Robert M., Salisbury; Med. Coll. of Va., 1900	1900	1904
Woodson, Charles W., Salisbury; Columbia Univ., P. and S., N. Y., 1904	1905	1907

RUTHERFORD COUNTY SOCIETY

President: P. H. Wiseman, Avondale; Med. Coll. of Va., 1925	1925	1926
Secretary: Wm. C. Bostic, Forest City; Chattanooga Med. Coll., 1899; N. C. Med. Coll., 1905	1905	1905
Allhands, John M., Cliffside; Chicago Coll. of Med. and Surg., 1910	1910	1911
Andrews, Robert M., Bostic; Memphis Hosp. Med. Coll., 1901	1904	1905
Biggs, Montgomery H., Rutherfordton; Univ. of Pa., 1897	1907	1908
Bostic, W. C., Jr., Forest City; Univ. of Pa., 1926	1926	1927
Crawford, Robt. H., Rutherfordton; Johns Hopkins, 1914	1920	1921
Duncan, Amos C., Forest City; Univ. of Va., 1919	1919	1920
Glenn, C. F., Rutherfordton; Univ. of Louisville	1927	1928
Gold, Charles F., Ellenboro; Univ. of N. C., 1910	1910	1911
Harrill, L. B., Caroleen; Chattanooga Med. Coll., 1897	1902	1904
Head, W. T., Campbell, R. 4, S. C.; Atlanta Coll. P. and S., 1911	1911	1923
Hicks, Romeo, Henrietta (Hon.); Southern Med. Coll., Atlanta	1889*	1899
Hunt, J. F., Spindale; Univ. of Tenn., 1900	1900	1912
Logan, F. W. F., Rutherfordton; N. C. Med. Coll., 1916	1916	1919
Lovelace, Thos. C., Henrietta; N. C. Med. Coll., 1917	1920	1920
Norris, Henry, Waverly Mills, S. C.; Univ. of Pa., 1897	1907	1908
Moss, G. O., Cliffside; Emory Univ., 1927	1927	1929
Reid, George P., Forest City (Hon.); Univ. Coll. of Med., Va., 1895	1894	1899
Rucker, Adin Adam, Rutherfordton; Univ. of Md., 1908	1908	1909
Thompson, W. A., Rutherfordton; P. and S., Balt., 1885	1889*	1904
Twitty, John C., Rutherfordton; Balt. Med. Coll., 1892	1892	1904
Verner, Carl Hugh, Forest City; P. and S., Atlanta, 1912	1923	1927

SAMPSON COUNTY SOCIETY

President: Gibson L. Sikes, Salemburg; Univ. Coll. of Med., Va., 1900	1900	1902
Secretary: D. M. Royal, Salemburg; Med. Coll. of Va.,	1926	1928
Brewer, J. Street, Roseboro; Jeff. Med. Coll., 1919	1919	1921
Crumpler, Paul, Clinton; Univ. of Tenn., 1907	1907	1908
Lee, J. Marshall, Newton Grove; Med. Coll. of Va., 1916	1920	1923
Matthews, James O., Clinton R. F. D.; Univ. Coll. of Med., Va., 1879	1879	1902
Parker, O. L., Clinton; Med. Coll. of Va., 1918	1918	1919
Sessoms, E. T., Roseboro; N. C. Med. Coll., 1915	1915	1917
Sloan, Wm. H., Garland; Univ. of Md., 1916	1916	1920
Small, Victor R., Clinton; Ohio State Univ. Med. Coll., 1916	1920	1921

SCOTLAND COUNTY SOCIETY

President: L. T. Buchanan, Laurinburg; Jeff. Med. Coll., 1913	1913	1917
Secretary: Everett Alex Livingston, Gibson; Univ. of Md., 1912	1912	1913

*Registered.

Erwin, Evan A., Laurinburg; Med. Coll. of S. C., 1912	1912	1913
James, F. P., Laurinburg; Univ. of Pa., 1916	1916	1917
John, Peter, Laurinburg; Univ. of Md., 1897	1897	1904
McLean, Allen, Wagram; Univ. of Md., 1908	1908	1911
McLean, Peter, Laurinburg; Univ. of Md., 1906	1907	1908
Pate, James G., Gibson; Univ. of Pa., 1916	1916	1917
Shaw, W. G., Wagram; P. and S., Balt., 1892	1895	1904
Wilcox, J. W., Patterson, N. J., care of Valley View Sanitorium, Univ. of N. C., 1906	1906	1906
Wilkes, Marcus B., Laurel Hill; N. C. Med. Coll., 1912	1923	1923

STANLY COUNTY SOCIETY

President: Lewis R. Gaskin, Albemarle; Med. Coll. of S. C., 1921	1924	1926
Secretary: Julius Clegg Hall, Albemarle; Univ. Coll of Med., Va., 1899	1899	1908
Allen, Jos. A., New London; Univ. Coll. of Med., Va., 1901	1901	1904
Campbell, Jas. I., Norwood; N. C. Med. Coll.	1898	1904
Cox, Benj. F., Palmerville; Coll. of P. and S., Balt., 1886	1886	1908
Dunlap, Lucius Victor, Albemarle; Univ. of N. C., 1909	1909	1910
Frazier, J. W., Badin; Jeff. Med. Coll., 1924	1924	1927
Hartsell, F. E., Oakboro; Balt. Med. Coll., 1895	1895	1902
Hathcock, Thomas A., Norwood; Univ. of Md., 1893	1893	1904
Hill, Wm. Isaac, Albemarle; Univ. of Md., and P. and S., Balt., 1897	1897	1904
Laton, James F., Albemarle; N. C. Med. Coll., 1904	1904	1910
Moore, D. Bain, Badin; Univ. Coll. of Med., Va., 1913	1913	1915
Shaver, W. T., Badin; Univ. of Md., 1918	1920	1921
Watson, Paul S., Oakboro; Med. Coll. of S. C., 1928	1928	1928

STOKES COUNTY SOCIETY

President:	.....	.....
Secretary:	.....	.....
Hackler, R. H., Walnut Cove	.....	.....
Helsabeck, C. J., Walnut Cove; Univ. of Md., 1919	1919	1922
Helsabeck, R. S., King; N. C. Med. Coll., 1913	1913	1920
Jones, A. G., Walnut Cove (Hon.); Univ. of N. Y., 1868	1894*	1892
McCanless, Wm. V., Danbury; Univ. of N. Y., 1893	1889*	1904
Stone, Grady E., King; N. C. Med. Coll., 1915	1915	1920

SURRY COUNTY SOCIETY

President: John L. Woltz, Mt. Airy; Sou. Med. Coll., 1897	1902	1904
Secretary: R. C. Mitchell, Mt. Airy; Univ. of Pa., 1919	1921	1923
Ashby, E. C., Mt. Airy; Univ. of Pa., 1914	1914	1916
Baird, C. A., Mt. Airy; N. C. Med. Coll., 1904	1904	1912
Flippin, Samuel T., Siloam (Hon.); N. C. Med. Coll., 1898	1898	1898
Folger, P. B., Dobson; Jeff. Med. Coll., 1922	1922	1924
Garvey, R R.., Elkin; N. C. Med. Coll., 1915	1915	1919
Gorham, H. J., Mt. Airy;	.....	.....
Hollingsworth, Edward M., Mt. Airy; Coll. of P. and S., Baltimore, 1886	1886	1904
Lovill, Robert Jones, Mt. Airy; Univ. of Md., 1910	1910	1912
Martin, Moir S., Mt. Airy; Univ. Coll. of Med., Va., 1905	1909	1916
Parks, Hugh, Elkin;	.....	.....

*Registered.

Ring, Joseph W., Elkin; P. and S., Balt., 1880	1890*	1904
Salmons, H. C., Elkin; N. C. Med. Coll., 1904	1904	1908
Smith, H. B., Westfield;	.....	.....
Smith, Jas. T., Westfield; N. C. Med. Coll., 1898	1899	1918
Smith, R. E., Mt. Airy; Univ. of Pa., 1923	1923	1926
Stone, Wesley M., Dobson; N. C. Med. Coll., 1906	1906	1907
Tillotson, S. F., Pilot Mountain; N. C. Med. Coll., 1905	1905	1922
Wellborn, William R., Elkin; N. C. Med. Coll., 1905	1908	1913

SWAIN COUNTY SOCIETY

President:	.....	.....
Secretary:	.....	.....

TRANSYLVANIA COUNTY SOCIETY

President:	.....	.....
Secretary:	.....	.....
Stokes, R. L., Brevard; P. and S., Balt., 1903	1921	1925
Wilkerson, J. B., Rosman; Memphis Hosp. Med. Coll.,	1923	1925
Lyday, Abram E., Penrose; Lincoln Mem. Univ., 1891	1909	1904

UNION COUNTY SOCIETY

President: A. F. Mahoney, Monroe; Univ. Louisville, 1911	1923	1924
Secretary: William M. Love, Monroe; N. C. Med. Coll., 1915	1915	1919
Ashcraft, J. E., Monroe; Univ. of N. Y., 1887	1887	1890
Blair, M. P., Marshville; Med. Coll. of Va., 1895	1895	1895
Garren, R. H., Monroe; Univ. of Nashville, 1900	1901	1904
Goudelock, Jno. J., Monroe; Med. Coll., S. C., 1923	1924	1924
House, W. O.,	.....	.....
James, Albert W., Monroe; Jeff. Med. Coll., 1918	1918	1921
Ormand, J. W., Monroe;	.....	.....
Pearson, Raymond, Monroe; N. C. Med. Coll., 1922	1923	1924
Perkins, David R., Marshville; Balt. Med. Coll., 1903	1906	1907
Pruitt, G. C., Monroe; Atlanta Coll. of P. and S., 1911	1920	1920
Smith, G. M. Monroe; N. C. Med. Coll., 1914	1914	1919
Stewart, H. D., Monroe; Univ. of Md., 1898	1898	1904

VANCE COUNTY SOCIETY

President: Goode Cheatham, Henderson; N. C. Med. Coll., 1895	1895	1896
Secretary: Benjamin G., Allen, Henderson; Columbia Univ., 1904	1904	1908
Fenner, Edwin F., Henderson; Univ. of Md., 1905	1906	1908
Furman, Wm. H., Henderson; Jeff Med. Coll., 1910	1910	1912
Gill, Robt. J., Henderson; Univ. of Pa., 1867	1889*	1900
Harris, Fletcher R., Henderson (Hon.); Univ. of Va., 1881	1883	1883
Newcombe, A. P., Jr., Henderson; Jeff. Med. Coll., 1922	1922	1924
Newell, H. A., Henderson; P. and S., Balt., 1906	1906	1906
Royster, Thomas S., Henderson; Univ. of Pa., 1916	1916	1924
Upchurch, Robert T., Henderson; Jeff. Med. Coll., 1908	1908	1910
Wheeler, J. H., Henderson; Jeff. Med. Coll., 1918	1918	1920

WAKE COUNTY SOCIETY

President: R. P. Noble, Raleigh; Univ. of N. C., 1907	1907	1916
Secretary: R. B. Wilkins, Raleigh; N. C. Med. Coll., 1913	1913	1915

*Registered.

Abernethy, Claude O., Raleigh; Univ. of N. C., 1906	1906	1907
Adams, R. K., Raleigh; Jeff. Med. Coll., Phila., 1912	1912	1916
Anderson, Albert, Raleigh (Hon.); Univ. of Va., 1888	1889	1890
Ashby, J. W., Raleigh; Univ. of Md., 1905	1921	1922
Barbee, G. S., Zebulon; Univ. of N. C., 1910	1910	1912
Baxter, O. D., Zebulon:	.....	1929
Bell, Carl W., Raleigh; Coll. of P. and S., Balt., 1914	1915	1916
Buffaloe, J. S., Garner; Balt. Med. Coll., 1900	1900	1904
Bugg, C. R., Raleigh; Johns Hopkins Med. Sch., 1922	1924	1925
Bulla, A. C., Raleigh; N. C. Med. Coll., 1915	1915	1918
Burt, B. W., Holly Springs; P. and S., Balt., 1886	1886	1904
Campbell, Alton C., Raleigh; Univ. of N. C., 1910	1910	1912
Carpenter, Coy C., Wake Forest; Syracuse Univ., 1924	1924	1927
Carroll, E. D. Dixon, Raleigh; Women's Med. Coll., N. Y., 1895	1900	1900
Caveness, Zebulon M., Raleigh; Univ. of N. C., 1903	1903	1903
Caviness, V. S., Raleigh; Jeff. Med. Moll., 1921	1921	1925
Cheek, C. E., Fuquay Springs; Univ. Coll. of Med., Va., 1912	1912	1914
Cooper, G. M., Raleigh; Univ. Coll. of Med., Richmond, 1905	1905	1906
Cozart, W. S., Fuquay Springs; Med. Coll. of Va., Rich., 1914	1914	1917
Dewar, Wm. B., Raleigh; Univ. of Pa., 1920	1920	1923
Edwards, C. J., Raleigh; Med. Coll. of Va., 1917	1921	1923
Eldridge, Chas. P., Raleigh; Univ. of Pa., 1926	1926	1927
Finch, O. E., Raleigh; Jeff. Med. Coll., 1915	1915	1917
Flowers, Clarence A., Wendell; P. and S., Balt., 1905	1907	1910
Flowers, C. E., Zebulon; Med. Coll. of Va., 1913	1915	1916
Fox, P. S. Raleigh;	.....	1929
Freeman, R. H., Raleigh; Jeff. Med. Coll., 1908	1908	1919
Gibson, M. R., Raleigh; Univ. of Md., 1905	1905	1914
Goodwin, A. W., Raleigh (Hon.); Bellevue Hosp. Med. Coll., 1887	1887	1887
Goodwin, O. S., Apex; Jeff. Med. Coll., 1923	1923	1926
Haywood, Hubert B., Jr., Raleigh; Univ. of Pa., 1909	1909	1910
Hester, Jos. R., Wendell; Univ. of N. C., 1910	1910	1912
Hicks, V. M., Raleigh; Jeff. Med Coll., 1918	1918	1921
Horton, M. C., Raleigh; Univ. Coll. of Med., Va., 1903	1911	1911
Horton, W. C., Raleigh; P. and S., Balt. 1897	1896	1904
Jenkins, Charles L., Raleigh (Hon.); N. Y. Univ. Med. Coll., 1890	1890	1894
Jones, Carey C., Apex; Jeff. Med. Coll., 1920	1920	1923
Jordan, Thos. M., Raleigh (Hon.); P. and S., Balt., 1881	1881	1882
Judd, Eugene C., Raleigh; Univ. of Pa., 1911	1911	1912
Judd, James M., Varina; Balt. Med. Coll., 1897	1897	1901
Kitchin, Thurman D., Wake Forest; Jeff. Med. Coll., 1908	1908	1908
Knox, Augustus W., Raleigh (Hon.); Bellevue Hosp. Med. Coll., 1874	1878	1880
Lane, Bessie, Raleigh; Women's Med. Coll., of Pa., 1921	1921	1926
Laughinghouse, Chas. O'H., Raleigh (Hon.); Univ. of Pa., 1893	1893	1894
Lawrence, B. J., Raleigh; Jeff. Med. Coll., 1918	1918	1920
Lowery, John R., Raleigh; Univ. of Md., 1904	1904	1913
McGee, James Wm., Raleigh (Hon.); Bellevue Hosp. Med. Coll., 1888	1888	1888
Mitchener, J. S., Raleigh; Johns Hopkins Univ., 1915	1915	1918
Monk, G. M., Raleigh	.....	1929
Neal, Kemp P., Raleigh; Harvard, 1917	1920	1921
Neal, Paul N., Raleigh; Harvard, 1919	1920	1921
Owen, J. F., Dix Hill, Raleigh; Jeff. Med. Coll.,	1920	1927

Perry, Sam W., Zebulon; Emory Univ.,	1929	1929
Powers, John B., Wake Forest	.....	1911
Proctor, I. M., Raleigh; Univ. of N. C., 1913; Univ. of Pa., 1915	1915	1917
Rand, E. G., Raleigh;	.....	1929
Ray, O. L., Raleigh; Rt. 1; Univ. Coll. of Med., Richmond, 1899	1899	1904
Register, F. M., Raleigh; Ky. School of Med., 1893	1891	1904
Rogers, Jas. Rufus, Raleigh; P. and S., Balt., 1886	1886	1904
Root, Aldert S., Raleigh; Univ. of Pa., 1911	1911	1913
Royster, Hubert A., Raleigh (Hon.); Univ. of Pa., 1894	1894	1895
Royster, W. I., Raleigh (Hon.); Bellevue Hosp. Med. Coll., N. Y., 1869	1869	1874
Shore, Clarence A., Raleigh; Johns Hopkins, 1908	1909	1909
Sisk, C. N., Raleigh; Univ. of Nashville, 1905	1922	1923
Smith, W. G., Wendell	.....	.....
Soady, J. H., Garner; McGill Univ., 1903; Toronto Univ., 1905	1924	1926
Strickland, W. M., Wendell; Med. Coll. of Va., 1919	1921	1923
Templeton, James McP., Cary; Balt. Med. Coll., 1882	1882	1893
Thompson, Hugh A., Raleigh; Univ. of Pa., 1914	1914	1917
Turner, H. G., Raleigh; Univ. of Pa., 1906	1907	1925
Vann, H. M., Wake Forest; Jeff. Med. Coll., 1917	1920	1923
Ward, W. T., Raleigh; Univ. of Md., 1925	1925	1927
Watson, John B., Raleigh; Univ. of N. C., 1908	1908	1909
Weathers, R. R., Knightdale; Richmond Med. Coll	1926	1928
West, Louis N., Raleigh; Jeff. Med. Coll., 1912	1912	1915
Wilkerson, Charles B., Raleigh; Univ. of N. C., 1906	1906	1908
Wilkinson, C. T., Wake Forest; Tulane Univ., 1922	1922	1923
Wilkinson, R. W., Jr., Wake Forest; Tulane Univ., 1922	1923	1924
Wright, J. B., Raleigh (Hon.); Univ. Coll. of Med., Va., 1899	1899	1900
Yarborough, Frank R., Cary; Univ. of Penn., 1923	1925	1926
Young, L. B., Wake Forest, Rt. 3; P. and S., Balt., 1886	1886	1906

WARREN COUNTY SOCIETY

President: T. J. Holt, Warrenton; Med. Coll., of Va., 1904	1904	1911
Secretary: W. D. Rogers, Jr., Warrenton; Jeff. Med. Coll., 1913	1913	1915
Foster, H. H., Norlina; Jeff. Med. Coll., 1919	1919	1923
Hunter, Frank P., Warrenton; Univ. of Va., 1925	1925	1927
Macon, G. H., Warrenton; Univ. Coll. of Med., Va., 1910	1910	1911
Peete, C. H., Warrenton; Univ. of Pa., 1903	1906	1911

WASHINGTON-TYRELL COUNTIES SOCIETY

Bray, T. L., Plymouth; Univ. of Md., 1916	1916	1919
Chapin, S. C., Columbia	.....	.....
Mariner, N. B., Belhaven; Univ. Coll. of Med., of Va., 1903	1903	1903
Speight, John W., Roper; Ky. Sch. of Med., 1885	1885	1904
Ward, William H., Plymouth (Hon.); Univ. of Md., 1881	1886	1886

WAYNE COUNTY SOCIETY

President: Charles F. Strosnider, Goldsboro; Univ. of Md., 1909	1910	1913
Secretary: M. E. Bizzell, Goldsboro; Tulane Univ., 1923	1923	1925
Best, D. E., Goldsboro; Univ. of Md., 1924	1924	1926
Bizzell, Thomas M., Goldsboro; Univ. of Md., 1908	1908	1916
Byrd, W. G., Goldsboro; State Hospital	.....	.....
Cobb, Donnell B., Goldsboro; Univ. of Pa., 1921	1921	1926

Cobb, W. H., Jr., Goldsboro; Jeff. Med. Coll., 1889	1889	1890
Corbet, L. W., Goldsboro; Med. Coll. of S. C., 1915	1925	1924
Crawford, W. J., Goldsboro; Med. Coll. of Va., 1922	1922	1923
Dale, G. C., Goldsboro; Univ. of Pa., 1925	1925	1927
Henderson, C. C., Mt. Olive; Univ. of Md., 1914	1914	1919
Henderson, T. B., Goldsboro; Med. Coll. of Va., 1906	1914	1915
Hollingsworth, E. T., Goldsboro; N. C. Med. Coll., 1912	1912	1915
Howard, C. E., Goldsboro; Univ. of Pa., 1925	1925	1927
Irwin, Henderson, Goldsboro; Univ. of Md., 1912	1914	1916
Ivey, H. B., Goldsboro; Univ. Coll. of Med., Richmond, 1911	1911	1917
Jones, Clara E., Goldsboro (Hon.); Women's Med. Coll. of Pa., 1894	1894	1897
Lassiter, C. L., Chattanooga, Tenn; Jeff. Med. Coll., 1915	1915	1918
Linville, W. C., Goldsboro; Univ. of Md., 1903	1903	1923
Lister, J. L., Mt. Olive; Med. Coll. of Va., 1896	1896	1909
Miller, Robert B., Goldsboro; Med. Coll. of Va., 1898	1900	1902
Moore, J. E., Mount Olive; Tenn. Med. Coll., 1900	1898	1918
Morris, George B., Goldsboro; Univ. of Md., 1910	1910	1912
Morris, G. Dillon, Goldsboro; Univ. of Pa., 1924	1924	1926
Person, Edgar Cooper, Pikeville; Med. Coll. of Va., 1905	1905	1908
Rand, C. H., Fremont; Univ. of Pa.,	1926	1928
Rose, David J., Goldsboro; Tulane Univ., 1922	1922	1924
Smith, Paul, Pikeville;	.....	1929
Smith, R. A., Goldsboro (Hon.); Bellevue Hospital, 1882	1882	1887
Smith, Wm. H., Goldsboro; Univ. of Pa., 1906	1907	1912
Spicer, John, Goldsboro; Bellevue Med., 1889	1890	1904
Spicer, William, Goldsboro; Bellevue Hosp. Med. Coll., 1898	1897	1904
Steel, Wm. C., Mt. Olive; Univ. of Md., 1891	1891	1894
Sutton, William G., Seven Springs; Jeff. Med. Coll., 1889	1889	1896
Warrick, L. A., Goldsboro; Geo. Washington Univ., 1923	1923	1924
Whelpley, Frank L., Goldsboro; Missouri Univ., 1902	1918	1918
Wilkins, J. W., Mt. Olive; Med. Coll. of Va., 1913	1913	1917
Woodard, A. G., Goldsboro; Univ. of N. C., 1907	1907	1909

WILKES COUNTY SOCIETY

President: C. S. Sink, North Wilkesboro; N. C. Med. Coll., 1912	1912	1913
Secretary: James H. McNeill, North Wilkesboro; Geo. Wash. Univ. Med. School, 1926	1926	1927
Duncan, Julian E., N. Wilkesboro; Univ. Coll. of Med., Va., 1907	1907	1908
Eller, Albert J., Readybranch; P. and S., Balt., 1893	1895	1898
Gilreath, Frank H., N. Wilkesboro (Hon.); Univ. of Nashville 1898	1898	1898
Hubbard, Fred C., North Wilkesboro; Jeff. Med. Coll., 1918	1919	1921
Hutchins, E. M., North Wilkesboro; N. C. Med. Coll., 1896	1896	1904
Somers, L. P., New Castle; Univ. of Md., 1897	1889*	1904
Tucker, W. A., North Wilkesboro; Jeff. Med. Coll., 1925	1925	1927
White, John W., Wilkesboro (Hon.); Jeff. Med. Coll., 1889	1889	1890

WILSON COUNTY SOCIETY

President: C. L. Swindell, Wilson; Univ. of Md., 1909	1909	1920
Secretary: M. A. Pittman, Wilson; Jeff. Med. Coll., 1921	1924	1923
Anderson, Wade H., Wilson; Univ. of Va., 1902	1904	1904
Bell, G. E., Wilson; Jeff. Med. Coll., 1921	1921	1922

*Registered.

Best, Henry B., Wilson; Univ. of N. C., 1907	1907	1908
Bradshaw, T. G., Wilson; Med. Coll. of Va., 1909	1924	1924
Dickinson, Elijah T., Wilson (Hon.); Med. Coll. of Va., 1895	1895	1900
Eagles, Charles S., Saratoga; Univ. of N. C., 1909	1909	1910
Freeman, Roma, Bailey;	.....	.....
Grady, Leland V., Wilson, Rt. 2; N. C. Med. Coll., 1913	1913	1914
Hackney, Hen H., Lucama; Tulane Univ., 1911	1911	1913
Herring, Benj. S, Wilson; Univ. of Mich., 1900	1901	1901
Lamm, Isaac W. Lucama, Wilson; Univ. Coll. of Med., Va., 1899	1899	1900
Lane, P. P., Wilson; Univ. of Md., 1908	1908	1920
Lewis, Geo. W., Wilson (Hon.); Univ. of Md., 1886	1885	1894
McClees, E. C., Elm City Med. Coll. of Va., 1917	1920	1920
Mitchell, G. W., Wilson; Univ. Coll. of Med., Va., 1913	1913	1920
Moore, Chas E., Wilson (Hon.); Bellevue Hosp. Med. Coll., 1875	1875	1875
Moore, Edwin G., Elm City (Hon.); Univ. of Md., 1883	1883	1890
Moore, K. C., Wilson; Univ. of Mich., 1909	1909	1910
Mullen, Malcom P., Wilson	.....	1928
Person, T. E., Stantonsburg; N. C. Med. Coll., 1911	1911	1914
Putney, R. H., Elm City; Med. Coll. of Va., 1914	1914	1920
Saliba, Michael M., Wilson; Balt. Med. Coll., 1897	1910	1910
Smith, A. Jones, Black Creek; Univ. of Pa., 1921	1921	1923
Smith, L. J., Wilson; Jeff. Med. Coll., 1912	1917	1918
Strickland, Ernest L., Wilson; Med. Coll. of Va., 1916	1916	1917
Williams, Albert F., Wilson; Univ. of Md., 1901	1901	1904
Willis, H. C., Wilson; Memphis P. and S., 1911	1916	1924
Woodard, C. A., Wilson; Univ. of Va., 1904	1904	1920
Woodard, G. B., Wilson; Med. Coll. of Va., 1915	1915	1916

YADKIN COUNTY SOCIETY

President:	.....	.....
Secretary: Charles G. Bryant, Jonesville; Louisville Med. Coll., 1894	1903	1904
Finney, J. R., Boonville	.....	1911
Leak, Wharton G., East Bend; N. C. Med. Coll., 1900	1899	1904
Russell, S. L., Yadkinville	.....	1904
Shore, T. W., Boonville	.....	1904

YANCEY COUNTY SOCIETY

Secretary: W. Burdett Robertson, Burnsville	.....	1908
Fairchilds, J. M., Celo	.....	1927
Peek, W. A., Ramseytown; non-graduate	1905*	1919

*Registered.

ALPHABETICAL LIST OF MEMBERS
WITH POSTOFFICE ADDRESSES

Name	*Address*
*Abel, J. F., (Hon.)	Waynesville
Abernathy, H. N	Charlotte
*Abernathy, Miles B	Reidsville
*Abernethy, Claude O	Raleigh
*Abernethy, E. A	Chapel Hill
Adams, C. A	Durham
Adams, Edw. E	Murphyy
Adams, J. L	Asheville
*Adams, M. R. (Hon.)	Statesville
*Adams, N. B	Murphy
Adams, R. K	Raleigh
Adkins, M. T	Durham
Alexander, Annie L. (Hon.)	Charlotte
Alexander, Geo	Asheville
Alexander, James M.	Statesville
*Alexander, Jas. R. (Hon.)	Charlotte
Alexander, M. Janet	Montgomery India (Mecklenburg Co.)
*Allan, William	Charlotte
Allen, Benjamin G	Henderson
*Allen, Chas. I	Wadesboro
*Allen, Jos. A	New London
Allen, Rufus L. (Hon.)	Waynesville
*Allen, W. O.,	Hendersonville
Allgood, R. A	Fayetteville
Allhands, John M	Cliffside
Ambler, Arthur C	Asheville
Ambler, Chase P. (Hon.)	Asheville
*Anders, McT. G	Gastonia
*Anderson, Albert (Hon.)	Raleigh
*Anderson, Chas. A. (Hon.)	Burlington
Anderson, James A	Gastonia
Anderson, James G	Asheville
*Anderson, L. L	Madison
*Anderson, Thos. Eli (Hon.)	Statesville
*Anderson, W. B	Durham
Anderson, Wade H	Wilson
Andes, George C	
Andrews, Robert M	Bostic
Angel, Frank	Franklin
Anthony, J. E	Kings Mountain
Archer, Isaac J	Black Mountain
*Armstrong, C. W	Salisbury
Ashburn, C. W	Winston-Salem
*Ashby, E. C	Mount Airy
Ashby, J. W	Raleigh
*Ashe, J. R	Charlotte
Ashcraft, J. E	Monroe
Ashworth, B. L. (Hon.)	Marion
*Ashworth, W. C. (Hon.)	Greensboro
Austin, D. R	Charlotte
*Austin, J. W., O.A.L.R	High Point
*Averitt, K. G	Cedar Creek
Aycock, F. M	Princeton
*Aydlett, H. T	Greensboro
Aydlette, Jos. P	Earl
Baggett, Leaman	Whiteville
*Bailey, C. W	Greensboro
Baird, C. A	Mt. Airy
Baird, John William	Marshall
Baker, Horace M	Lumberton
*Baker, J. M. (Hon.)	Tarboro
Baker, W. E	Arden
Ball, M. W	New Bern
*Bandy, W. G	Lincolnton
*Bangle, J. A	Concord
*Banner, A. C., O.A.L.R	Greensboro
*Banner, Chas. W., O.A.L.R	Greensboro
Barbee, G. S	Zebulon
Barefoot, Graham B	Chadbourne
Barker, C. S	New Bern
Barnes, Dempsey	Asheboro
Barnes, Tiffany	Asheboro
Barrett, H. P	Charlotte
*Barrett, J. M	Greenville
*Barron, A. A	Charlotte
Basnight, Thos. G	Stokes
*Bass, H. H	Durham

*Present at 1929 Meeting at Greensboro.

Name	*Address*
Bass, Spencer P.	Tarboro
Battle, Geo. C.	Asheville
Battle, Ivan P.	Rocky Mount
*Battle, John T. J. (Hon.)	Greensboro
*Baxter O. D.	Zebulon
*Baylis, E. Katherine	Greensboro
Baynes, R. H.	Durham
*Beall, L. G.	Black Mountain
*Beall, Wm. P. (Hon.)	Greensboro
Beam, H. M.	Roxboro
Beam, R. S., O.A.L.R.	Lumberton
Beasely, E. B.	Fountain
Beckwith, R. P.	Roanoke Rapids
Beers, David L.	Asheville
Belk, Geo. W.	Gastonia
*Bell, A. E.	Mooresville
Bell, Carl W.	Raleigh
*Bell, F. O.	Aberdeen
Bell, G. E.	Wilson
Bell, J. C.	Maysville
Benbow, J. T.	Winston-Salem
Bender, E. L.	New Bern
*Bennett, E. C.	Elizabethtown
Bennett, Jos. H.	Wadesboro
*Berry, John	Greensboro
*Best, Benj. W.	Greensboro
*Best, D. E.	Goldsboro
Best, Henry B.	Wilson
Bethune, A. T.	Raeford
*Biggart, Wm. P.	Charlotte
Biggs, Montgomery H.	Rutherfordton
Bigler, V. L.	Kinston
*Billings, G. M.	Morganton
Bingham, Plato	Marion
*Bitting, Numa Duncan	Durham
*Bittinger, S. M.	Sanatorium
*Bizzell, M. E.	Goldsboro
*Bizzell, Thos. M.	Goldsboro
*Black, George Wm.	Pineville
Black, O. R.	Landis
Blackburn, T. C.	Hickory
Blair, Andrew	Charlotte
*Blair, A. McNeill	Southern Pines
*Blair, J. L.	Gastonia
*Blair, M. P.	Marshville
Blalock, B. K.	North Charlotte
*Blanchard, T. W.	Hobbsville
Blevins, Manly	West Jefferson
Blue, A. McN.	Carthage
Blue, Waylon	Jonesboro
Blumberg, Alfred	Oteen
Boaz, Thos. A.	Stoneville
*Boddie, Needham P. (Hon.)	Durham
*Boddy, Edmund C.	Southern Pines
Boger, D. T.	Rockwell
Boice, E. S.	Rocky Mount
Boker, Col. David	Fort Bragg
Boney, Elwood, R.	Kinston
Bonner, H. M.	Morehead City
Bonner, J. B.	Washington
*Bonner, K. P. B.	Morehead City
*Bonner, O. B., O.A.L.R.	High Point
*Booker, L. S.	Durham
Boone, S. B.	Jackson
Boone, W. H.	Durham
*Boone, W. W.	Durham
*Bost, T. C.	Charlotte
Bostic, Wm. C.	Forest City
*Bostic, W. C., Jr.,	Forest City
*Bowers, M. A.	Winston-Salem
*Bowles, Francis N.	Durham
*Bowman, E. L.	McDonalds
Bowman, H. E.	Aberdeen
*Bowman, H. P.	Greensboro
Bown, Herbert H.	Asheville
Boyden, W. C.	China Grove
Boyer, Maj. Gouveneur H. Ft. Bragg	
Boyles, A. C.	Box 806, Arcadia, Fla. (Montgomery Co.)
*Boyles, J. H.	Greensboro
Boyles, M. F.	Dallas
Braddy, Wade H.	Burlington
Bradford, B. M.	Cherryville
*Bradshaw, T. G.	Wilson
*Bradsher, J. S.	Stovall
Brantley, Hassell	Spring Hope
Brantley, J. C.	Spring Hope
*Braswell, Wm. Edgar	Bessemer
Brawley, M. H., O.A.L.R.	Salisbury
Bray, T. L.	Plymouth
*Brenizer, A. G., Jr.	Charlotte
*Brewer, J. S.	Roseboro
Brewton, W. A.	Canton
*Bridger, D. H.	Bladenboro
*Bridges, D. T.	Lattimore
Briggs, H. H., O.A.L.R.	Asheville
*Brinkley, H. M.	Durham
Brinn, T. P.	Hertford

Name	*Address*
Bristow, C. O.	Rockingham
Britt, C. S.	Charlotte
Britt, J. N.	Lumberton
*Britt, T. C.	Durham
*Brittle, Paul C.	Burlington
*Broadway, R. E.	Tarboro
*Brockmann, Harry L.	High Point
*Brooks, B. U.	Durham
*Brooks, G. M.	Rocky Mount
*Brooks, R. E.	Burlington
Brookshire, H. G.	Asheville
*Broun, Matthew S., O.A.L.R.	Asheville
Brown, E. M.	Washington
Brown, G. A. (Hon.)	Mt. Ulla
Brown, G. W.	Raeford
Brown, J. P.	Fairmont
Brown, J. S. (Hon.)	Hendersonville
Brownsberger, John F	Asheville
Brownson, Wm. C. (Hon.)	Asheville
*Bryan, Lorenzo D.	Snead's Ferry
Bryant, Chas. G.	Jonesville
Buchanan, L. T.	Laurinburg
Buchanan, S. E.	China Grove
Buck, Daid M.	Asheville
Buffaloe, J. S.	Garner
Bugg, C. R.	Raleigh
*Buie, Roderick M.	Greensboro
*Bulla, A. C.	Raleigh
Bullard, G. F.	Elizabethtown
Bullitt, J. B.	Chapel Hill
Bulluck, Ernest S.	Wilmington
Bunn, J. J.	Mt. Pleasant
Burleson, W. B.	Plumtree
Burleyson, L. N.	Cabarrus
Burns, J. E.	Concord
Burress, D. A.	High Point
*Burrus, John T. (Hon.)	High Point
Burt, B. W.	Holly Springs
Burt, S. P.	Louisburg
Busby, Julian G.	Salisbury
*Butler, Leroy J.	Winston-Salem
Butt, R. B.	Marion
*Byerly, Andrew B.	Cooleemee
Byerly, Wesley Grimes	Sanatorium
*Bynum, John (Hon.)	Winston-Salem
*Byrd, W. G.	Goldsboro
*Caldwell, D. G.	Concord
Campbell, Alton C.	Raleigh
Campbell, A. S.	Durham
Campbell, Jas. I.	Norwood
Campbell, J. W.	Gastonia
Candler, Chas. Z.	Sylva
Cannady, Sam H.	Oxford
Carey, Winston Durham	Sanford
*Carlyle, J. B.	Burlington
Carmichael, T. W.	Rowland
Carpenter, Coy C.	Wake Forest
*Carr, Eugene M.	Asheville
Carr, M. L.	LaGrange
*Carrington, G. L.	Burlington
*Carroll, E. D. Dixon	Raleigh
Carroll, F. W.	Hookerton
Carroll, John William	Wallace
*Cater, C. D.	Greensboro
Carter, H. W., O.A.L.R.	Washington
*Carter, P. C.	Madison
Carter, Thos. L.	Gatesville
Casstevens, J. C.	Clemmons
*Casteen, Kenan	Leaksville
Castelloe, Cola	Windsor
Cathell, J. E.	Moncure
Cauble, H. H.	Kannapolis
*Caviness, Zebulon M.	Raleigh
*Caviness, V. S.	Raleigh
Chapin, S. C.	Columbia
Chapin, Wm. Burdette	Pittsboro
*Cheatham, Goode	Henderson
*Cheek, C. E.	Fuquay Springs
Cheesborough, Thos. P. (Hon.)	Biltmore
Chester, P. J., O.A.L.R.	Fayetteville
*Chiles, George G.,	Durham
*Choate, Glenn Wm.	Salisbury
*Choate, J. W. (Hon.)	Salisbury
Clark, D. D.	Clarkton
Clark, E. S.	Clarkton
Clark, H. S.	Asheville
*Clement, Edward B., O.A.L.R.	Salisbury
Cliff, B. F.	Hendersonville
Clinton, Roland S.	Gastonia
Cloninger, L. V.	Statesville
Clyatt, Claude Eugene	Denton
Coats, Maj. Edward A.	Fort Bragg
*Cobb, Donnell B.	Goldsboro
Cobb, Wm. H., Jr.,	Goldsboro
Cochran, J. D.	Newton
Cocke, C. H.	Asheville
Cocke, E. R.	Asheville

Name	*Address*
Cocke, Jere E.	Asheville
Codington, H. A.	Wilmington
Coe, Samuel S.	High Point
Coffey, Lawrence H., 911 E. Main St. Lakeland, Fla., (Caldwell Co.)	
Colby, C. DeW.	Asheville
*Cole, Walter F.	Greensboro
*Coleman, G. S.	Kenly
*Collins, Geo.	Raleigh
*Collings, Ruth M.	Greensboro
*Cook, H. L.,	Greensboro
*Cooke, G. C.	Winston-Salem
*Cooper, G. M.	Raleigh
Coppedge, T. O.	Nashville
Coppedge, W. P.	Candor
*Coppridge, W. M.	Durham
*Corbett, Clarence Lee	Dunn
*Corbett, L. W.	Goldsboro
Cornwell, A. M.	Lincolnton
Corpening, O. J.	Granite Falls
Costner, Thos. F.	Lumberton
Costner, W. V.	Lincolnton
Cotten, Clyde E.	Asheville
Couch, V. F.	Winston-Salem
Council, J. B. (Hon.)	Salisbury
Covington, Platt W., 1479 Harrison St. Salt Lake City, Utah, (Anson Co.)	
Cox, Benj. F.	Palmerville
Cox, B. T.	Winterville
Cox, E. L. (Hon.)	Jacksonville
Cox, G. S.	Tabor
Cox, Thomas A	Hertford
*Cozart, S. R.	Greensboro
*Cozart, W. S.	Fuquay Springs
Craddock, A. B.	Asheville
*Craig, S. Douglas	Winston-Salem
*Cranmer, J. B.	Wilmington
*Craven, F. C., O.A.L.R.	Greensboro
Craven, Thomas	Huntersville
Craven, W. W.	Charlotte
Crawford, Robt. H.	Rutherfordton
Crawford, W. J.	Goldsboro
Crews, N. H.	Greensboro
Crisp, S. M.	Greenvile
Cromartie, R. S.	Elizabethtown
Crouch, A. McR.	Wilmington
Crouch, T. D.	Stony Point
*Crow, S. L.	Asheville
*Crowell, A. J. (Hon.)	Charlotte
*Crowell, L. A. (Hon.)	Lincolnton
Crowell, W. H.	Whiteville
*Crumpler, Paul	Clinton
*Cummings, M. P.	Reidsville
Currie, D. S.	Parkton
*Cutchin, J. Henry	Whitakers
*Dale, G. C.	Goldsboro
*Daligny, Charles (Hon.)	Troy
Dalton, David N. (Hon.)	Win.-Salem
Dalton, Wm. N.	Winston-Salem
Daniel, N. C.	Oxford
*Daniels, O. C., O.A.L.R.	Oriental
Daniels, R. L.	New Bern
Darden, O. B.	Richmond, Va. (Durham Co.)
Daughtridge, A. L.	Rocky Mount
Daugherty, J. E.	Brooklyn, N. Y. (Forsyth Co.)
*Davenport, C. A.	Hertford
*Davidson, Jno. E. S. (Hon.)	Charlotte
*Davis, F. M.	Canton
Davis, George	Beaufort
*Davis, J. Franklin	High Falls
*Davis, Jas. W.	Statesville
Davis, J. M.	Wadesboro
Davis, P. B., Sheraton Hotel, High Point	
*Davis, R. B.	Greensboro
Davis, Thomas W., O.A.L.R.	Winston-Salem
*Davison, Wilburt C.	Durham
*Dawson, Walter W.	Grifton
Dawson, W. E.	Hookerton
Deans, A. W.	Battleboro
DeArmon, J. McC. (Hon.)	Charlotte
Dees, D. A., O.A.L.R.	Bayboro
*Dees, R. E.	Greensboro
*Dees, Rigdon O.	Greensboro
Denchfield, A. L.	Asheville
*Denson, H. A.	Bennett
Denton, A. L.	Castalia
*Dewar, William B.	Raleigh
*Dick, Julius V.	Gibsonville
*Dickie, J. W.,	Southern Pines
*Dickinson, E. T. (Hon.)	Wilson
*Dickson, M. S.	Longwood
Dillard, G. P.	Draper
Ditmore, Harry B.	Marshall
*Dixon, G. G.	Ayden
*Dixon, Hubert C.	Madison

Name	*Address*
*Dixon, W. H.	Rocky Mount
Dixon, Wm. H.	Kinston
Donnelly, J.	Huntersville
Dosher, J. A.	Southport
Drafts, Andrew B.	Hendersonville
Duffy, Leinster	New Bern
Duffy, R. N.	New Bern
Duguid, Jos. W.	Dover
Duncan, Amos C.	Forest City
Duncan, Julian E.	N. Wilkesboro
Duncan, S. A.	Coats
Dunlap, L. V.	Albemarle
Dyer, John W.	High Point
*Eagle, J. C.	Spencer
Eagles, Chas. S.	Saratoga
Easley, P. S.	Statesville
Eckel, O. F.	Asheville
Eddleman, Hall M. (Hon.)	Gastonia
Edgerton, Jas. L. (Hon.)	Hendersonville
Edwards, B. O.	Asheville
Edwards, C. J.	Raleigh
Edwards, C. P.	Asheville
Edwards, E. C.	Southern Pines
Edwards, F. D.	Lawndale, Rt. 1
Edwards, J. D. (Hon.)	Siler City
*Edwards, V. E.	Greensboro
Eldridge, Chas. P.,	Raleigh
*Elias, Lewis W.,	Asheville
Ellen, C. J.	Greenville
Eller, Albert J.	Readybranch
*Ellington, A. J., O.A.L.R.	Burlington
Elliott, A. H.	Wilmington
Elliott, G. D.	Fair Bluff
Elliott, J. A.	Charlotte
Elliott, J. C.	Oxford
*Elliott, W. F., O.A.L.R.	Lincolnton
Ellis, R. C. (Hon.)	Shelby
Erwin, Evan A.	Laurinburg
*Eskew, D. C.	Winston-Saalem
Evans, J. E.	Wilmington
*Evans, L. B.	Windsor
Evans, W. E.	Rowland
Everett, A. C.	Rockingham
Fairchilds, J. M.	Celo
*Faison, Yates W.	Charlotte
*Farrington, R. K.	Thomasville
Farrior, J. W.	Warsaw
Farthing, L. E.	Wilmington
*Fassett, Burton W., O.A.L.R.	Durham
Fauntleroy, Jas. W.	Zirconia
Fearing, Isaiah	Elizabeth City
Felts, Robt. L.	Durham
Fenner, Edwin F.	Henderson
Ferebee, C. G.	Morehead City
*Ferguson, R. T.	Charlotte
*Ferneyhough, W. T.	Greensboro
*Fetner, L. M.	Charlotte
*Fetzer, P. W.	Madison
Fields, Robert M.	Goldston
Finch, O. E.	Raleigh
Finney, J. R.,	Boonville
Fitch, W. E.	Buffalo Junction, Va. (Granville Co.)
Fitzgerald, J. H., O.A.L.R.	Smithfield
*Flagge, Philip W.	High Point
Fleetwood, Joe A.	Conway
Flippin, J. M.	Hickory
Flippin, Samuel T. (Hon.)	Siloam
Flowe, R. Frank	Kannapolis
Flowers, Clarence A.	Wendell
Flowers, C. E.	Zebulon
Floyd, A. J.	Longwood
Floyd, H. T.	Oteen
Floyd, L. D.	Cerro Gordo
Foard, F. T.	Hickory
Folger, P. B.	Dobson
Folsom, T. W.	Asheville
Ford, D. E.	New Bern
*Formyduval, T.	Bolton
Fortune, Alex. F.	Greensboro
*Foster, H. H.	Norlina
*Foster, J. F.	Sanford
Fouts, J. H.	Franklin
*Fox, N. A.	Guilford College
*Fox, P. S.	Raleigh
Francis, Wm. G.	Waynesville
Frazer, H. Thompson	Asheville
*Frazier, J. W.	Badin
*Freeman, J. D., O.A.L.R.	Wilmington
Freeman, Roma	Bailey
*Freeman, R. H.	Raleigh
Freeman, Wm. T.	Biltmore
Fresh, W. M.	Hickory
Frizzelle, M. T.	Ayden
*Fryar, C. H.	Oak Ridge
Frye, Glenn R.	Hickory
Furman, Wm. H.	Henderson
Futrell, L. M.	Murfreesboro

Name	*Address*
*Futrell, W. E.	Greenville
Gage, L. G.	Charlotte
Gallant, Robt. M.	Charlotte
Galloway, W. C. (Hon.) O.A.L.R.	Wilmington
Gamble, J. F.	Lincolnton
*Gamble, J. R.	Lincolnton
*Gambrell, Grover C.	Lexington
Garren, R. H., O.A.L.R.	Monroe
Garrenton, Cecil	Bethel
*Garrett, F. B.	Rockingham
*Garrison, D. A. (Hon.)	Gastonia
Garriss, F. H.	Lewiston
*Garvey, R. R.	Elkin
Gary, R. H.	Murfreesboro
Gaskins, Lewis R.	Albemarle
Gaul, Jno. Stuart	Charlotte
Gaw, L. B.	Greensboro
*Geddie, K. B.	Sanatorium
Gentry, Geo. W.	Roxboro
George, John C.	Oteen
*Gibbon, James	Charlotte
Gibbon, Robert L. (Hon.)	Charlotte
Gibbs, N. M.	New Bern
Gibson, L. O.	Statesville
*Gibson, M. R., O.A.L.R.	Raleigh
Gill, Robert J.	Henderson
*Gilmore, C. M.	Greensboro
Gilmore, W. D.	State Sanatorium Basin, Wyoming (Iredell-Alexander Co.)
Gilreath, Frank H. (Hon.)	N. Wilkesboro
*Glascock, Joy H.	Greensboro
Glenn, C. F.	Rutherfordton
*Glenn, Lucius N.	Gastonia
*Goad, R. R.	Statesville
Godwin, G. C.	Oteen
*Gold, Ben	Shelby
Gold, Chas. F.	Ellenboro
*Gold, T. B.	Shelby
*Goley, Willard Coe	Graham
Goley, Wm. Rankin, (Hon.)	Graham
*Goley, Wm. R.	Shallotte
*Goode, T. V.	Statesville
*Goodman, A. B.	Lenoir
Goodwin, A. W. (Hon.)	Raleigh
Goodwin, O. S.	Apex
Gordham, H. J.	Mt. Airy
Goudelock, Jno. J.	Monroe
*Goudge, Mabel E.	West Durham
Gouge, A. E.	Bakersville
Gouger, Geo. J. (Hon.)	Concord
*Gove, Anna M. (Hon.)	Greensboro
Grady, Jas. C. (Hon.)	Kenly
Grady, Leland V.	Wilson, Rt. 2
Grady, Wm. Earle (Hon.)	Tryon
Graham, Wm. A. (Hon.)	Charlotte
Grantham, Wm. L.	Asheville
Gray, Eugene P.	Winston-Salem
*Grayson, C. S.	High Point
*Green, J. C.	Greenville
*Green, Thos. M.	Wilmington
*Greene, Jos. B., O.A.L.R.	Asheville
*Greenwood, A. B.	Asheville
Greenwood, S. E.	Fletcher
Gregg, A. D.	Liberty
Grier, Chas. T.	Carthage
*Griffin, H. L.	Star
Griffin, M. A.	Asheville
Griffin, W. R.	Asheville
*Griffith, F. W.	Asheville
Griffith, L. M., O.A.L.R.	Asheville
Griggs, John B.	Elizabeth City
Griggs, W. T.	Poplar Branch
Grimes, W. L.	Winston-Salem
Groome, J. G.	High Point
Groves, R. B.	Lowell
*Gwyn, H. L.	Yanceyville
Gyles, Roland C.	Siler City
Hackler, R. H.	Walnut Cove
*Hackney, Ben H.	Lucama
Hagaman, J. B.	Boone
Hahn, Milton	Asheville
Halford, Jos. W.	Lillington
Hall, James S.	Wilmington
*Hall, J. Clegg	Albemarle
Hambrick, Robt. T.	Hickory
*Hamilton, John H.	Wilmington
Hammond, A. F.	Pollocksville
Hamrick, T. G.	Shelby
Hand, Edgar H.	Charlotte
*Harbison, J. W.	Shelby
Hardee, W. P.	Durham
*Harden, Graham	Burlington
*Harden, R. N.	Greensboro
*Hardin, R. H.	Banner Elk
*Harding, S. A.	Mocksville
Hardy, Ira M., O.A.L.R.	Kinston

Name	*Address*
Harper, J. H.	Snow Hill
Harper, J. M.	Rt. 6, Greensboro
Harrell, S. N.	Tarboro
Harrill, L. B.	Caroleen
Harrington, Carey L.	Sanatorium
Harris, Arthur G.	Fairfield
Harris, F. R. (Hon.)	Henderson
*Harris, W. T.	Troy
*Harrison, Edmund (Hon.)	Greensboro
*Harrison, Edward T.,	High Point
*Harrison, H. H.	Asheville
Harriss, Andrew H. (Hon.)	Wilmington
Hart, Jno. E.	Wadesboro
*Hart, V. K.	Statesville
Hartsell, F. E.	Oakboro
Hartsell, J. A.	Concord
Hathcock, Thos. A.	Norwood
Hayes, R. B.	Hillsboro
Hays, A. H.	Fairmont
Hays, B. K. (Hon.)	Oxford
Haywood, Hubert B., Jr.,	Raleigh
Hayworth, C. A.	Asheboro
Head, W. T.	Campobello, S. C., Rt. 4 (Rutherford Co.)
Hedrick, C. R.	Lenoir
*Hege, J. Roy	Winston-Salem
Heighway, S. C.	Murphy
Heilig, Herman G.	Salisbury
*Helsabeck, C. J.	Walnut Cove
Helsabeck, R. S.	King
*Hemmingway, J. D.	Gastonia
Henderson, C. C.	Mount Olive
Henderson, Jno. P.	Jacksonville
Henderson, R. B.	Franklinton
*Henderson, S. McD.	Charlotte
Henderson, T. B., O.A.L.R.	Goldsboro
*Henry, T. B.	Rockingham
Hensley, Chas. A.	Asheville
Herbert, Fred L.	Andrews
Herbert, Wm. P.	Asheville
Herman, Chas. B.	Statesville
Herring, Benj. S.	Wilson
Herring, R. A.	Greensboro
Hester, Jos. R.	Wendell
*Hiatt, H. B.	High Point
Hickman, M. T.	Hudson
Hicks, Calvin S.	Durham
Hicks, I. F.	Dunn
Hicks, Romeo (Hon.)	Henrietta
*Hicks, V. M., Oph.	Raleigh
*Highsmith, Charles	Dunn
*Highsmith, J. D.	Fayetteville
*Highsmith, J. F. (Hon.)	Fayetteville
Highsmith, J. F., Jr.,	Fayetteville
*Highsmith, Seavy	Fayetteville
Hill, J. N.	Murphy
Hill, W. Lee	Lexington, Rt. 4
*Hill, Wm. I.	Albemarle
Hines, E. R.	Rocky Mount
Hipp, Edw. R.	Charlotte
Hipps, A. G. T.	Asheville
Hobgood, J. E.	Thomasville
*Hocutt, Battle A.	Clayton
Hodge, A. R.	Severn
Hodges, Jos. M.	Boone
Hodgin, H. H.	Red Springs
Hoggard, J. T.	Wilmington
Hoggard, Wm. A.	Elizabeth City
Hollingsworth, E. M.	Mount Airy
Hollingsworth, E. T.	Goldsboro
*Holloway, Joseph C.,	Durham
Holloway, O. W.	Durham
Hollyday, W. M., O.A.L.R.	Asheville
*Holmes, A. B.	Fairmont
*Holt, D. W.	Greensboro
Holt, T. J.	Warrenton
*Holt, Wm. P.	Erwin
*Holt, Wm. P., Jr.,	Erwin
*Holt, Wm. T.	McLeansville
Holton, Thos. J.	Charlotte
Hood, J. Sidney	Gastonia
Hooker, John S.	Farmville
Hooper, D. D.	Sylva
*Hooper, Jos. W.	Wilmington
Hoover, C. H.	Crouse
Horsley, H. T.	Franklin
Horton, M. C., O.A.L.R.	Raleigh
Horton, W. C.	Raleigh
Houck, Albert F. (Hon.)	Lenoir
House, W. O.	
Houser, E. A.	Shelby
Houser, O. J.	Charlotte
Hovis, L. W., O.A.L.R.	Charlotte
Howard, C. E.	Goldsboro
Howard, J. R.	Concord
Howe, Wm. B. W., Jr.,	Hendersonville
Howell, W. L.	Ellerbe

Name	*Address*
Hoyle, Hughes B.	Manteo
Hubbard, Chas. C.	Farmer
*Hubbard, Fred C.	N. Wilkesboro
*Hudson, C. C.	Greensboro
Huffines, T. R.	Asheville
Hunsucker, Charles R.	Hickory
Hunt, J. F.	Spindale
*Hunt, W. Bryce	Lexington
Hunter, Frank P.	Warrenton
Hunter, L. W. (Hon.)	Charlotte, Rt. 1
*Hunter, Myers	Charlotte
*Hunter, M. C.	Huntersville
Hunter, W. B.	Cramerton
*Hurdle, S. W.	Winston-Salem
*Huston, Jno. W.	Asheville
Hutchins, E. M.	North Wilkesboro
*Hutchinson, S. S.	Bladenboro
Hyde, Francis E.	Beaufort
*Ingersoll, Louise M.	Asheville
*Ingram, Chas. B. (Hon.)	Mt. Gilead
Irwin, Hamner C.	Pocatella, Idaho (Mecklenburg Co.)
*Irwin, Henderson	Goldsboro
*Irwin, J. R. (Hon.)	Charlotte
*Ivey, H. B.	Goldsboro
Ivey, R. R., U.S.P.H.S.	Biltmore
*Izlar, H. L.	Winston-Salem
Jackson, C. C.	Yeatsville
*Jackson, Walter Leo	High Point
Jacocks, W. P.	New York City (Lincoln Co.)
*James, Albert W.	Monroe
James, F. P.	Laurinburg
*James, W. D.	Hamlet
*Jarboe, Parran	Greensboro
Jarman, F. G.	Roanoke Rapids
Jenkins, Chas. L. (Hon.)	Raleigh
*Jennings, C. W., O.A.L.R.	Greensboro
*Jennings, R. G.	Thomasville
Jervey, A. J.	Tryon
Jett, Samuel G.	Reidsville
Jewett, R. D. (Hon.) O.A.L.R.	Wilmington
*John, Peter	Laurinburg
Johnson, B. C.	Bunn
Johnson, C. T.	Red Springs
*Johnson, Floyd	Whiteville
*Johnson, Geo. W.	Wilmington
Johnson, Harry H.	Louisburg
*Johnson, Harry L.	Greensboro
Johnson, John B.	Old Fort
*Johnson, J. R.	Ramseur
Johnson, N. M. (Hon.)	Durham
Johnson, Otis H.	Morehead City
Johnson, R. Lee	Gastonia
*Johnson, Thos. C.	Lumberton
*Johnson, W. A.	Reidsville
Johnson, W. C.	Canton
*Johnson, W. M.	Winston-Salem
Johnston, J. G., O.A.L.R.	Charlotte
Johnston, W. W.	Manteo
*Jonas, John F.	Marion
Jones, A. G. (Hon.)	Walnut Cove
*Jones, Arthur O.	Greensboro
Jones, Beverly N., O.A.L.R.	Winston-Salem
Jones, Carey C.	Apex
Jones, Clara E. (Hon.)	Goldsboro
Jones, R. Duval	New Bern
Jones, Thomas J.	Lansing
Jones, T. Lester	Lansing
Jones, W. M.	Gastonia
Jones, W. S.	Nashville
*Jones, Wm. M.	Greensboro
Jordan, Chas. S. (Hon.)	Asheville
*Jordan, S. R.,	Pleasant Garden
*Jordan, T. M. (Hon.)	Raleigh
Jordan, Wm. S., O.A.L.R.	Fayetteville
Joyner, C. C.	Farmville
Judd, Eugene C.	Raleigh
Judd, James M.	Varina
*Julian, Chas. A. (Hon.)	Greensboro
*Jurney, Peter Claywell	Turnersburg
Justice, Gaston B.	Marion
*Kapp, Henry H.	Winston-Salem
*Keiger, Jas. A.	Greensboro
*Keiger, O. R.	Winston-Salem
*Keith, Marion Y.	Greensboro
Kelleher, L. B.	Charlotte
Kelly Luther W.	Charlotte
Kende, Tibor Norbert	Morganton
Kendrick, R. L.	Elizabeth City
Kennedy, Geo. W.	Beulahville
*Kennedy, John P.	Charlotte
Kent, Alfred A. (Hon.)	Winter Park, Fla. (Caldwell Co.)
Kernodle, Chas. E.	Elon College
*Kerns, T. C., O.A.L.R.	Durham

Name	*Address*
*Kerr, Jas. E. (Hon.)	Winston-Salem
Ketchie, J. M.	Salisbury
Kibler, W. H.	Morganton
Kimberly, David, Jr.,	Hot Springs
King, Edward	Asheville
*King, Parks M.	Charlotte
King, Richard M.	Concord
*Kinlaw, Wm. B.	Rocky Mount
Kinsman, Henry F.	Hamlet
Kirby, Guy S.	Marion
Kirkpatrick, W. L.	Waynesville
Kirksey, James J.	Morganton
Kirksey, W. A.	Hope Mills
Kiser, W. C.	Lincolnton
*Kitchin, Thurman D.	Wake Forest
Knight, Floyd L.	Sanford
*Knight, Wm. P. (Hon.)	Greensboro
Knowles, D. L.	Rocky Mount
Knox, A. W. (Hon.)	Raleigh
Koonce. S. Everett, O.A.L.R. (Hon.)	Wilmington
Kornegay, Lemuel W.	Rocky Mount
Kutscher, G. W., Jr.,	Swannonoa
Lackey, F. H.	Fallston
*Lackey, M. A.	Mooresville
*Lacy, Thos. A.	Cameron
Lafferty, Robt. H.	Charlotte
*Lambert, C. F.	Spruce Pine
*Lambert, W. L.	Asheboro
Lamm, Isaiah W. (Hon.)	Lucama
Lancaster, F. J.	Lexington
Landen, J. F.	Chinquapin
*Lane, Bessie	Raleigh
Lane, John L., O.A.L.R.	Rocky Mount
*Lane, P. P.	Wilson
Lassiter, C. L., 100 Oxford St., N. E.,	Chattanooga, Tenn. (Wayne Co.)
Lassiter, H. G.	Weldon
Latham, Jos. R.	New Bern
*Laton, Jas. F., O.A.L.R.	Albemarle
Lattimore, E. B.	Shelby
*Laughinghouse, Chas. O'H. (Hon.)	Raleigh
*Lawrence, B. J.	Raleigh
*Lawrence, Chas. S.	Winston-Salem
Lawson, R. B.	Chapel Hill
Lea, J. I.	Tryon
Leak, W. G.	East Bend
Ledbetter, Jas. McQ., O.A.L.R.	Rockingham
*Lee, J. Marshall	Newton Grove
*Lee, Lawrence V.	Lattimore
*Lee, Mike	Kinston
Lee, R. E.	Lincolnton
*Lee, S. E.	Sanatorium
*Lee, Thomas L.	Kinston
Leeper, Donald H.	Hiddenite
Leinbach, Robt. F.	Charlotte
Lewis, Geo. W. (Hon.)	Wilson
Lewis, H. W. (Hon.)	Jackson
Lilly, Jas. M., O. A. L. R.	Fayetteville
Lindberg, O. S.	Candler
Linville, A. Y. (Hon.)	Winston-Salem
Linville, W. C.	Goldsboro
Lister, E. W.	Weeksville
Lister, J. L.	Mount Olive
*Little, E. E.	Statesville
Little, Lonnie M.	Statesville
*Livingston, E. A., O.A.L.R.	Gibson
Lloyd, B. B.	Chapel Hill
*Locke, Eva M.	White Rock
*Lockett, Everett A.	Winston-Salem
*Lockey, W. J.	Cherryville
Logan, F. W. F.	Rutherfordton
Long, Benj. Leroy	Glen Alpine
*Long, E. F.	High Point
Long, Edgar M.	Hamilton
Long, Fred Y.	Catawba
Long, Glenn	Newton
Long, H. F. (Hon.)	Statesville
Long, R. H.	Morganton
*Long, T. W. M.	Roanoke Rapids
*Long, V. McK.	Winston-Salem
Looney, J. J. W.	Rocky Mount
*Lord, Marjery J.	Montreat
Love, Bedford E.	Roxboro
Love, S. Glenn	Asheville
Love, Wm. M.	Monroe
Lovelace, Thos. C.	Henrietta
*Lovill, Robt. J.	Mount Airy
Lowery, John R.	Raleigh
Lowry, Sidney Allen	Kings Mt.
Lubchenko, N. E.	Harrisburg
Lutterloh, I. Hayden, Jr.	Sanford
*Lutterloh, I. H., Sr.	Sanford
Lyday, Abram E.	Penrose
*Lyday, C. E.	Gastonia
*Lyday, R. O.	Greensboro
Lyle, S. H.	Franklin

Name	*Address*
Lynch, J. M.	Asheville
*Lyon, B. R.	Greensboro
Lyon, Henry Wise	Rocky Mount
*MacConnell, John W., O.A.L.R.	Davidson
MacFadyen, Paul R.	Concord
*MacNider, Wm. deB.	Chapel Hill
MacRae, J. D.	Asheville
McAdams, C. R.	Belmont
McAnally, Jas. McG.	High Point
*McAnally, Wm. J. (Hon.)	High Point
McBane, T. W.	Pittsboro
*McBrayer, L. B.(Hon.)	Southern Pines
McBrayer, R.	New Haven, Conn. (Hoke Co.)
McBryde, M. H.	Reidsville
*McCain, P. P.	Sanatorium
*McCain, Wm. R.	High Point
McCall, A. C., O.A.L.R.	Asheville
McCanless, Wm. V.	Danbury
*McCampbell, John (Hon.)	Morganton
McChesney, W. W.	Gastonia
*McClees, E. C.	Elm City
McClellan, W. E.	Asheville
McCombs, C. J.	Gastonia
McConnell, H. R.	Gastonia
McCoy, Thos M.	Charlotte
McClotter, St. Elmo	Bayboro
McCracken, C. M.	Fairview
*McCracken, J. R., O.A.L.R.	Waynesville
*McCreary, A. B.	Rockingham
McCuiston, A. M.	Kinston
*McCutchan, Frank	Salisbury
*McCutcheon, W. B.	Durham
*McDade, B. B.	Burlington
*McDaniel, L. E.	Jackson
McDonald, Augustus A.,	Jackson Springs
McDuffie, W. N.	Hemp
McElwee, Ross S.	Statesville
McFadden, R. H.	Charlotte
McFadyen, O. L.	Fayetteville
*McGeachy, R. S. (Hon.)	Kinston
*McGee, G. M.	Greensboro
McGee, Jas. W. (Hon.)	Raleigh
*McGehee, Jno. Wm.	Reidsville
McGoogan, Benj. J.	McFarlan
McGregor, Geo. D.	Charlotte
McIntosh, D. M.	Old Fort
*McIntosh, W. R.	Rockingham
*McIver, Lynn	Sanford
*McKay, H. W.	Charlotte
*McKay, Jos. F. (Hon.)	Buies Creek
*McKay, Robert W.	Charlotte
McKay, W. P.	Fayetteville
*McKenzie, B. W.	Salisbury
*McKnight, R. B.	Charlotte
McLaughlin, C. S.	Charlotte
McLaughlin, J. E. (Hon.)	Statesville
McLean, Allen	Wagram
*McLean, E. K.	Charlotte
*McLean, John W.	Godwin
McLean, Peter	Laurinburg
McClelland, W. D.	Mooresville
McLemore, Geo. A.	Smithfield
McLeod, A. H.	Aberdeen
*McLeod, W. G.	Southern Pines
McLesky, J. H.	Charlotte
McManus, W. L.	Greensboro
*McMillan, B. F. (Hon.)	Red Springs
McMillan, J. M.	Candor
McMillan, W. D. (Hon.)	Wilmington
McNairy, Caroline	Lenoir
*McNeill, Jas. H.	North Wilkesboro
*McPhail, L. D.	Charlotte
McPhaul, W. A.	Charlotte
*McPherson, C. W., O.A.L.R.	Burlington
McPherson, R. G.	Saxapahaw
*McPherson, S. D., O.A.L.R.	Durham
*Macon, G. H.	Warrenton
*Mahoney, A. F.	Monroe
Mallett, E. P.	Hendersonville
*Malloy, S. A.	Yanceyville
Mangum, C. P.	Kinston
*Mann, I. Thurman	High Point
Manning, I. H.	Chapel Hill
Manning, John M. (Hon.)	Durham
Mariner, N. B.	Belhaven
Markham, Blackwell	Durham
Marr, M. W.	Pinehurst
Marsh, Frank B.	Salisbury
Martin, J. A.	Lumberton
Martin, J. F.	Dunn
Martin, J. H.	Red Oak
*Martin, Lester P.	Mocksville
Martin, Moir S.	Mt. Airy
Martin, Sydnor L.	Leaksville

Name	*Address*
Martin, W. C., O.A.L.R.	Mocksville
*Martin, Wm. F.	Charlotte
Martin, Wm. F.	Charlotte
Mason, Manly	Newport
*Massey, C. C.	Smithfield
Matheson, James P.	Charlotte
Mattheson, R. A.	Raeford
Matthews, B. B.,	Shelby
Matthews, James O.	Clinton, R.F.D.
Matthews, Vann M.	Charlotte
*Mathews, M. L.	Sanford
Matthews, Wm. W.	Spray
Maxwell, C. S.	Beaufort
Maxwell, J. F.	Kinston
Mayerberg, I. W.	Selma
Meadows, W. J.	Greensboro
Mears, George A.	Asheville
Mebane, W. C.	Wilmington
Melvin, W. C.	Linden
Menzies, H. C. (Hon.)	Hickory
Menzies, H. H.	Hickory
Meriwether, Benj. Morsell	Asheville
Merritt, John H.	Woodsdale, R. 1
Micheaux, Edward R. (Hon.)	Greensboro
Miles, May S.	Greensboro
Millander, C. W.	Asheville
Miller, J. F.	Marion
*Miller, Oscar L.	Gastonia
Miller, R. C.	Gastonia
Miller, Robert B.	Goldsboro
*Milliken, J. S.	Southern Pines
Mills, C. H. C.	Charlotte
Misenheimer, C. A. (Hon.)	Charlotte
Misenheimer, Thos. M.	Charlotte
*Misenheimer, E. A.	Concord
*Mitchel, G. P.	Jennings
*Mitchell, Geo. W.	Wilson
Mitchell, Jesse H.	Ahoskie
Mitchell, Paul H.	Ahoskie
*Mitchell, R. C.	Mt. Airy
Mitchell, T. B.	Shelby
Mitchell, Thos. B.	Lincolnton
Mitchell, W. F.	Shelby
*Mitchell, Z. P.	Weldon
*Mitchener, J. S., O.A.L.R.	Raleigh
Mock, Frank L.	Lexington, R. 3
Monk, G. M.	State Hospital, Raleigh
*Monk, Henry L.	Salisbury
*Monroe, J. P.	Sanford
Montague, S. J.	Durham
*Montgomery, Harry M.	Burlington
Montgomery, John C. (Hon.)	Charlotte
Montgomery, Kenneth E.	Asheville
Moore, Alexander W.	Charlotte
*Moore, C. E.	Greensboro
*Moore, Chas E. (Hon.)	Wilson
Moore, D. B.	Mt. Holly
*Moore, D. B.	Badin
*Moore, D. F.	Shelby
Moore, Edwin G. (Hon.)	Elm City
*Moore, Henry B.	Graham
Moore, J. E.	Mount Olive
Moore, K. C.	Wilson
*Moore, Oren	Charlotte
Moore, R. A.	Charlotte
Moore, R. A.	Winston-Salem
Moore, T. V.	Acme
*Moore, W. Houston	Wilmington
Morgan, B. E.	Asheville
*Morgan, G. A.	Asheville
Morrill, D. S.	Farmville
Morris, G. Dillon	Goldsboro
*Morris, Geo. B.	Goldsboro
*Morris, Jos. A.	Oxford
Morrow, Wm. C.	Andrews
Morton, J. X.	Faison
*Moseley, Chas. W. (Hon.)	Greensboro
Moser, W. D.	Burlington
Moss, G. O.	Cliffside
*Motley, Fred Elliott	Charlotte
Mudgett, W. C.	Southern Pines
Mullen, Malcom P.	Wilson
Munroe, H. Stokes	Charlotte
*Munroe, J. P. (Hon.)	Charlotte
*Munt, H. F.	Winston-Salem
Murchison, D. R.	Wilmington
Murphy, Gibbons W.	Asheville
*Murphy, John G., O.A.L.R.	Wilmington
*Murphy, W. B.	Snow Hill
*Murray, R. L.	Raeford
*Myers, Alonzo	Charlotte
Myers, D. L.	Jennings
*Myers, John Q.	Charlotte
Myers, R. W.	Fullers, Rt. 1
Nalle, B. C.	Charlotte
*Nance, C. L.	Charlotte
*Nash, J. Fred	St. Paul

Name	*Address*
Neal, Kemp P.	Raleigh
Neal, Paul N.	Raleigh
Neblett, H. C.	Charlotte
Nelson, R. J. (Hon.)	Robersonville
Nesbitt, Charles T.	Wilmington
Neville, H. C.	Enfield
Newby, G. E.	Hertford
Newcombe, A. P., Jr.,	Henderson
*Newell, H. A., O.A.L.R.	Henderson
Newell, J. O.	Louisburg
Newell, Leone B.	Charlotte
Newman, Harold H.	Salisbury
Newman, L. B.	Andrews
Newton, Howard L.	Charlotte
Nichols, Alvin A.	Sylva
Nichols, Asbury S.	Sylva
Nichols, Austin F.	Roxboro
*Nichols, Rhodes E.	Durham, Rt. 8
Nicholson, B. M.	Enfield
Nicholson, C. R.	Statesville
Nicholson, N. G.	Mt. Gilead
Nicholson, J. L.	Washington
Nicholson, J. T.	Bath
Nicholson, P. A. (Hon.)	Washington
Nicholson, S. T. (Hon.)	Washington
*Nisbet, D. Heath	Charlotte
Nisbet, Walter O.	Charlotte
Noble, R. J. (Hon.)	Selma
Noble, R. P.	Raleigh
Nobles, Jos. E.	Greenville
Noblin, Roy L.	Oxford
Noell, R. H.	Rocky Mount
Nolan, J. V.	Kannapolis
Norburn, C. S.	Asheville
Norburn, R. L.	Asheville
Norfleet, A. C.	Tarboro
Norfleet, E. P.	Roxobel
Norman, J. S., O.A.L.R.	Hickory
Norris, Henry	Waverly Mills, S. C.
*Northington, J. M.	Charlotte
*Nowell, S. C.	Hickory
*O'Briant, A. L.	Sanford
Odell, J. W.	Dunn
*Ogburn, H. H.	Greensboro
Ogilvie, Hanson S.	Asheville
Olive, P. W.	Fayetteville
*Ormand, J. W.	Monroe
*Orr, Chas. C.	Asheville
Orr, P. B.	Ashevile
*Orr, W. J. B.	Smithfield
Owen, J. F.	Dix Hill, Raleigh
*Ownbey, Arthur D.	Greensboro
Pace, K. B.	Greenville
*Paddison, J. R.	Kernersville
Page, B. W.	Trenton
Palmer, M. C.	Tryon
*Palmer, R. W.	Gulf
*Parker, G. E.	Benson
Parker, Geo. F.	Asheville
*Parker, H. R.	Greensboro
*Parker, J. W.	Seaboard
Parker, O. L.	Clinton
Parker, Paul G.	Erwin
Parks, Hugh	Elkin
Parks, W. B.	Gastonia
Parrott, Albert DeK.	Kinston
*Parrott, Jas. M. (Hon.) O.A.L.R.	Kinston
Parrott, M. C.	Kinston
Parrott, Wm. T.	Kinston
*Parsons, W. H.	Ellerbe
Pate, J. F.	East Flat Rock
*Pate, James Frederick, O.A.L.R.	Greensboro
*Pate, Jas. G.	Gibson
Patman, W. L.	Greensboro
Patrick, Geo. R., Jr.,	Bessemer City
*Patrick, J. E.	Bahama
Patrick, L. N., O.A.L.R.	Gastonia
*Patterson, Fred M.	Greensboro
*Patterson, Jno. A., O.A.L.R.	Concord
Patterson, Jos. F.	New Bern
Patterson, Reid	Charlotte
Patton, A. B.	Greensborc
Payne, J. W.	E. Flat Rock
*Pearson, Raymond	Monroe
Peek, W. A.	Ramsaytown
Peeler, Clarence N., O.A.L.R.	Charlotte
Peeler, John H.	Salisbury
Peery, Vance P.	Kinston
Peete, C. H.	Warrenton
Pemberton, Wm. D. (Hon.)	Concord
Pendleton, Wilson	Asheville
*Pepper, Jno. Kerr	Winston-Salem
Perkins, David R.	Marshville
Perkins, Jno. R., O.A.L.R.	Winston-Salem
Perry, A. H.	Wood

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*Perry, D. R.	Durham
*Perry, E. M.	Rocky Mount
Perry, H. B.	Boone
*Perry, H. G.	Louisburg
Perry, Sam W.	Zebulon
Person, Edgar C., O.A.L.R.	Pikeville
*Person, J. B., Jr., (Hon.)	Selma
Person, T. E.	Stantonsburg
Peters, W. A.	Elizabeth City
Peterson, C. A.	Spruce Pine
Peterson, J. M.	Spruce Pine
*Petrie, Robt. Wm., O.A.L.R.	Lenoir
Petteway, Geo. H.	Charlotte
*Pfohl, Samuel F. (Hon.)	Winston-Salem
Phifer, Edward M.	Morganton
*Phillips, C. C.	Charlotte
*Phillips,, C. H.	Thomasville
Pickett, John A., Burlington, R. F. D. 1	
Pitcher, G. S.	Southport
Pittman, E. E.	Oak City
*Pittman, M. A.	Wilson
Plyler, R. J.	Salisbury
Pollard, W. B.	Winton
Pollock, Raymond	New Bern
Pool, B. B.	Winston-Salem
Pope, Henry T.	Lumberton
*Post, J. J.	Greensboro
*Poston, J. Lewis	Statesville
*Powell, Albert H.	Durham
*Powell, Wm. H., Jr.,	Fayetteville
Powers, John B.	Wake Forest
Pressly, Geo. W. (Hon.)	Charlotte
Pressly, J. L.	Statesville
Pressly, J. M.	Belmont
Price, H. L.	Taylorsville
Pritchard, G. L.	Black Mountain
Proffit, Thos. J.	Elk Park
*Proctor, I. M.	Raleigh
Pruitt, G. C.	Monroe
Pugh, Chas. H.	Gastonia
Purdy, J. J.	Oriental
Putney, R. H.	Elm City
*Query, Richard Z.	Charlotte
Quickel, Thos. C., O.A.L.R.	Gastonia
Quinn, Robert F.	Magnolia
Rainey, W. T.	Fayetteville
Ramseur, W. L.	Kings Mountain
Ramsey, James G.	Salisbury
*Rand, C. H.	Fremont
Rand, E. G.	Raleigh
Rankin, P. R.	Mount Gilead
Rankin, R. B.	Concord
*Rankin, S. W.	Winston-Salem
*Rankin, Watson S.	Charlotte
*Ranson, J. Lester	Charlotte
*Ravenel, S. F.	Greensboro
Ray, F. L.	Charlotte
*Ray, John B.	Leaksville
Ray, O. L.	Raleigh, Rt. 1
Ray, R. C.	Beaver Creek
Raymer, J. G.	Greensboro
*Reaves, C. R., O.A.L.R.	Greensboro
*Reaves, W. P., O.A.L.R.	Greensboro
Redding, Alex H., (Hon.)	Cedar Falls
*Redfern, T. C.	Winston-Salem
Reed, D. H.	Maxton
Reed, John F.	Concord
Reeves, A. F.	Asheville
Reeves, B. E.	W. Jefferson
*Reeves, J. L.	Canton
*Reeves, R. J.	Leicester
*Register, F. M.	Raleigh
Reid, Geo. P.	Forest City
Reid, James W.	Lowell
Reid, Thomas N.	Matthews
*Reitzel, C. E.	High Point
*Reynolds, C. V. (Hon.)	Asheville
Rhodes, James S.	Williamston
*Rhudy, Booker E.	Greensboro
*Rhyne, Robt. E.	Gastonia
Rhyne, S. A.	Statesville
Richardson, F. H.	Black Mountain
Richardson, Jas. C.	Charlotte
Ricks, Leonard E.	Fairmont
Riddle, J. B.	Morganton
Riggsbee, A. E.	Durham
Ring, Joseph W.	Elkin
*Ringer, Paul H.	Asheville
Roberson, Charles	Greensboro
Roberson, E. Mike	Durham
*Roberson, Foy	Durham
Roberts, Bryan Nazer	Longwood
*Roberts, B. W.	Durham
Roberts, W. N.	Gastonia
Robertson, James F.	Wilmington
*Robertson, J. N.	Fayetteville
Robertson, W. Burdette	Burnsville
Robinson, E. E.	Concord

Name	*Address*
*Robinson, J. D.	Wallace
Robinson, W. F.	Mars Hill
Rodgers, Jas. Rufus	Raleigh
*Rodgers, W. D.	Warrenton
Rodman, J. C. (Hon.)	Washington
*Rodwell, Jno. W. (Hon.)	Mocksville
Rogers, W. A. (Hon.)	Franklin
*Root, Aldert S.	Raleigh
*Rose, David J.	Goldsboro
Ross, Geo. Floyd	Asheville
*Ross, Geo. H.	East Durham
*Ross, Otho B.	Charlotte
*Ross, Robert A.	Durham
Ross, Robet D.	Wadesboro
Rosser, R. G.	Vass
Rouse, Noah	Belhaven
Rousseau, J. P.	Winston-Salem
*Royal, Ben F.	Morehead City
*Royal, D. M.	Salemburg
*Royster, Hubert A. (Hon.)	Raleigh
Royster, S. S.	Shelby
*Royster, Thomas H.,	Roanoke Rapids
*Royster, Thos. S.	Henderson
Royster, W. I. (Hon.)	Raleigh
Rozier, R. G.	Cerro Gordo
Rucker, A. A.	Rutherfordton
Rudisill, J. D.	Lenoir
Russell, C. R.	Granite Falls
Russell, Jesse M.	Canton
Russell, Lloyd P.	Fletcher
Russell, S. L.	Yadkinville
Sabiston, Frank, O.A.L.R.	Kinston
Sadler, R. C.	Vineland
Saliba, John	Elizabeth City
Saliba, M. M., O.A.L.R.	Wilson
Salley, E. McQueen	Saluda
Salmons, H. C.	Elkin
Sample, R. C.	Hendersonville
Saunders, Jos. H.	Williamston
Saunders, S. Stewart	High Point
*Sawyer, Chas. J. (Hon.) O.A.L.R.	Windsor
Schaffle, Karl	Asheville
Schaub, O. P., O.A.L.R.	Winston-Salem
*Schenk, Sam M.	Shelby
*Schoenheit, E. W.	Asheville
Schonwald, J. T. (Hon.)	Wilmington
*Schoonover, R. A.	Greensboro
Schuler, J. E.	East Durham
*Scott, Charles L.	Sanford
Scott, R. C.	Asheville
Scott, S. F.	Union Ridge
Sexton, C. Hector	Dunn
Scruggs, W. Marvin	Charlotte
*Seay, T. W.	East Spencer
Sessoms, E. T.	Roseboro
Sevier, D. E. (Hon.)	Asheville
Sevier, J. T.)Hon.)	Asheville
*Seawell, Marion H.	Jackson
*Shafer, Irving E.	Salisbury
Shamburger, J. B. (Hon.)	Star
*Sharpe, C. R.	Lexington
*Sharpe, F. A.	Greensboro
*Sharpe, Frank L.	Statesville
*Sharpe, O. L.	Greensboro
Shaver, W. T.	Badin
Shaw, J. A.	Fayetteville
Shaw, W. G.	Wagram
*Shelburne, P. A.	Greensboro
Shellum, O. W.	Denver
Sherrill, C. L.	Statesville
Sherrill, H. R.	Lawndale
Shields, Henry B.	Carthage
Shirley, H. C., O.A.L.R.	Charlotte
*Shohan, Jos.	Greensboro
*Shore, Clarence A.	Raleigh
Shore, T. W.	Boonville
*Shreve, J. R.	Brown Summit
Shuford, Jacob H.	Hickory
Shull, J. Rush	Charlotte
*Sidbury, J. B.	Wilmington
Sigman, F. G.	Spencer
*Sikes, G. L.	Salemburg
*Sikes, G. T. (Hon.)	Creedmoor
*Simmons, L. L., O.A.L.R.	Greensboro
*Simmons, R. R.	Winston-Salem
*Simpson, H. H.	Altamahaw
Singletary G. C.	Clarkton
Sink, C. S.	N. Wilkesboro
*Sisk, C. N.	Raleigh
*Skinner, Louis C.	Greenville
*Slate, John S.	Winston-Salem
*Slate, J. W.	High Point
Slate, Wesley C.	Spencer
Sloan, A. B.	Mooresville
*Sloan, D. B., O.A.L.R.	Wilmington
Sloan, H. L., Oph.	Charlotte
Sloan, Wm. H.,	Garland

Name	*Address*
Slocum, R. B.	Wilmington
Sloop, Eustace H.	Crossnore
Small, Victor R.	Clinton
Smith, A. Jones	Black Creek
Smith, Alick T.	Greensboro
*Smith, Annie T.	Durham
Smith, B. R.	Asheville
Smith, C. T.	Rocky Mount
*Smith, D. L.	Saluda
*Smith, F. C., O.A.L.R.	Charlotte
Smith, Fitzhugh Lee	Bahama
*Smith, F. L.	Burlington
Smith, G. M.	Monroe
*Smith, H. B.	Westfield
*Smith, J. A.	Lexington
Smith, Jas. T.	Westfield
Smith, Joseph	Greenville
Smith, Jos. E.	Windsor
*Smith, L. J.	Wilson
Smith, O. F.	Scotland Neck
Smith, Owen	High Point
Smith, Paul	Pikeville
Smith, R. A. (Hon.)	Goldsboro
Smith, R. C.	Grifton
*Smith, R. E.	Mt. Airy
Smith, Robt. W.	Hertford
Smith, Slade A.	Wilmington
Smith, W. F.	Chadbourn
*Smith, W. G.	Wendell
Smith, William Gordon	Thomasville
*Smith, Wm. H.	Goldsboro
Smithwick, Jas. E.	Jamesville
Smoot, J. E.	Concord
Snipes, E. P. (Hon.)	Jonesboro
*Soady, J. H.	Garner
Somers, L. P.	New Castle
*Sosserman, J. C.	Midland
Sowers, Jacob L.	Lexington
*Sowers, Roy G.	Jonesboro
Spainhour, Ellis H. (Hon.)	Winston-Salem
Sparrow, Thos DeL.	Charlotte
*Speas, W. P., O.A.L.R.	Haverford, Pa. Box 15 (Catawaba Co.)
Speed, J. A.	Durham
Speight, J. A.	Rocky Mount
Speight, John W.	Roper
Spencer, Frederick B.	Salisbury
Spencer, Wm. O. (Hon.)	Winston-Salem
Spicer, John	Goldsboro
Spicer, William	Goldsboro
*Spikes, N. O.	Durham
*Spoon, A. O.	Greensboro
Spoon, Chas. E.	Burlington
*Spoon, S. C.	Graham
Sprinkle, C. N.	Weaverville
Sprinkler, W. M.	Waynesville
*Spruill, Jos. L.	Jamestown
*Sprunt, W. H., Jr.,	Winston-Salem
*Squires, Claude B.	Charlotte
Staley, S. Walter	Rocky Mount
Stamps, Thos. (Hon.)	Lumber Bridge
Stancell, W. W.	Seaboard
*Stanford, Lois Foote	Durham
*Stanford, W. R.	Durham
Stanley, John H.	Four Oaks
*Stanton, D. A. (Hon.)	High Point
Stanton, T. M.	High Point
*Starr, H. F.	Greensboro
Staton, H. V.	Hendersonville
Steel, Wm. C.	Mt. Olive
*Stevens, M. L. (Hon.)	Asheville
Stevens, R. S.	Princeton
Stevens, W. L.	Shiloh
*Stewart, H. D.	Monroe
Stillwell, H. C.	Maiden
*Stirewalt, Neal	Kannapolis
Stockton, W. I.	Carthage, R.F.D.
Stokes, Jas. E.	Salisbury
Stokes, P. B.	Kings Mountain
Stokes, R. L.	Brevard
Stone, Geo. G.	Greenville
Stone, Grady E.	King
Stone, M. L.	Rocky Mount
*Stone, Wesley M.	Dobson
Stoner, I. J.	West Durham
*Straughan, J. W.	Warsaw
*Street, M. E.	Glendon
*Strickland, E. F. (Hon.)	Winston-Salem
Strickland, E. L.	Wilson
Strickland, W. M.	Wendell
Stringfellow, Jas. L.,	Waynesville
Sringfield, Samuel L.	Waynesville
Stringfield, Thos. (Hon.)	Waynesville
*Strong, Chas. M. (Hon.)	Charlotte
*Strosnider, Chas. F.	Goldsboro

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Strowd, W. A.	Durham
*Suiter, W. G.	Weldon
Sullivan, Claude H.	Charlotte
Summerell, E. M., Hon.	China Grove
Summers, Chas. L., 11 E. Chase St.	Baltimore, Md., (Forsyth Co.)
Sumner, G. H.	Asheboro
Sumner, Howard L.	Asheville
Sumner, Thos. W.	Fletcher
*Sumners, Emmett A.	Randleman
Surles, J. B.	Four Oaks
Sutton, Carl W.	Richlands
Sutton, Wm. G.	Seven Springs
Swann, Jos. F.	Gastonia
Sweaney, H. M.	Durham
Swindell, C. L.	Wilson
Swindell, Lewis H.	Washington
*Symington, John	Carthage
Talley, J. S.	Troutman
*Tankersley, J. W.	Greensboro
*Tate, C. S.	Ramseur
Tate, W. C.	Banner Elk
Tatum, Roy C.	Statesville
*Tayloe, D. T. (Hon.)	Washington
*Tayloe, D. T., Jr.,	Washington
Tayloe, John Cotton	Washington
Tayloe, Joshua, Jr.	Washington
Taylor, B. C.	Mount Holly
Taylor, E. H. E.	Morganton
*Taylor, F. R.	High Point
Taylor, G. W.	Mooresville
Taylor, H. C.	Charlotte (Chadwick Sta.)
Taylor, James N.	Greensboro
*Taylor, James T.	Greensboro
Taylor, R. W.	Oxford
Taylor, S. R., O.A.L.R.	Greensboro
Taylor, T. G.	Leaksville
*Taylor, Wesley	Greensboro
Taylor, Wm. L.	Oxford
Taylor, W. I.	Burgaw
*Teague, S. E.	Hamlet
*Templeton, James M.	Cary
Templeton, J. Y.	Mooresville
Tennent, G. S., (Hon.) O.A.L.R.	Asheville
Terry, Geo. H. B.	Oteen
*Terry, J. R.	Lexington
Terry, P. R.	Asheville
Terry, Wm. Calvin	Hamlet
Thaxton, B. A.	Roxboro
Thigpen, H. G.	Scotland Neck
Thigpen, Wm. J.	Tarboro
*Thomas, J. G.	Greensboro
*Thomas, W. Clyde	Siler City
Thomas, Wm. N.	Oxford
Thompson, A. C.	Asheville
Thompson, A. F., O.A.L.R.	Troy
*Thompson, C. D.	High Point
*Thompson, Cyrus	Jacksonville
*Thompson, Hugh A.	Raleigh
*Thompson, J. M.	Mebane
Thompson, Joseph W.	Creedmoor
*Thompson, Malcolm D.	Greenville
*Thompson, S. R.	Charlotte
Thompson, S. W., Jr.	Morehead City
Thompson, W. A.	Rutherfordton
Thorp, A. T.	Rocky Mount
Thurston, Asa	Taylorsville
Tice, W. T.	Peachland
Tidwell, J. E.	Andrews
Tillotson, S. F.	Pilot Mountain
Tilson, Jacob C.	Marshall
Timberlake, C. V.	Youngsville
Timberlake, R. E.	Youngsville
*Todd, L. C.	Charlotte
Toole, A. F.	Asheville
Townsend, M. L.	Washington, D. C. (Mecklenburg Co.)
*Toy, Calvert R.	Chapel Hill
Triplett, W. R.	Purlear
*Trivette, W. A.	Hamptonville
*Troxler, R. M.	Burlington
Tucker, Jno. H.	Charlotte
Tucker, W. A.	North Wilkesboro
*Turner, H. G.	Raleigh
*Turner, J. P.	Greensboro
Tuttle, A. F.	Spray
*Tuttle, Reuben G.	Winston-Salem
*Twitty, John C.	Rutherfordton
Tydeman, F. W. L.	St. Louis, Mo. Care of Roxana Petrole Corp. (Mecklenburg Co.)
Tygett, G. J.	Statesville
Tyler, E. R.	Durham
*Tyner, Carl V.	Leaksville
*Tyson, T. D.	Mebane
Upchurch, Robt. T.	Henderson

Name	*Address*
Upchurch, R. W.	Durham
Utley, H. H.	Benson
*Valk, A. deT.	Winston-Salem
Vann, H. M.	Wake Forest
Vann, J. R., Jr.	Spring Hope
Van Epps, Owen B.	Cashiers
*Van Poole, C. M. (Hon.)	Salisbury
Vaughan, J. C.	Rich Square
*Verdery, W. C.	Fayetteville
Verner, Carl Hugh	Forest City
*Vernon, Jas. W.	Morganton
*Vestal, Willis J. (Hon.)	Lexington
Wadsworth, H. B.	New Bern
Wadsworth, Wm. H.	Concord
Wakefield, Harry A., O.A.L.R.	Charlotte
*Walker, H. D.	Elizabeth City
*Walker, J. B.	Gibsonville
Walker, L. K.	Ahoskie
*Walker, T. D.	Winston-Salem
Walker, Walter E., O.A.L.R.	Burlington
*Walters, Chas. M.	Burlington
Wannmaker, Edw. J., Jr.,	Charlotte
Wanstrom, Ruth	Asheville
Ward, Jesse E.	Robersonville
Ward, I. A.	Elizabeth City
*Ward, John LaB.	Asheville
Ward, Vernon A.	Robersonville
Ward, Wm. H. (Hon.) O.A.L.R.	Plymouth
Ward, W. T.	Raleigh
*Warren, R. F.	Prospect Hill
*Warren, Wm. E.	Williamston
Warrick, L. A.	Goldsboro
Watkins, F. B.	Morganton
Watkins, G. T.	Durham
Watkins, John A.	Asheville
*Watkins, W. M.	Durham
Watson, John B.	Raleigh
Watson, Leon	Broadway
*Watson, Paul S.	Oakboro
*Watson, Thos. M.	Wilmington
*Weathers, Bahnson	Roanoke Rapids
Weathers, R. R.	Knightdale
Weaver, Henry B. (Hon.)	Asheville
Weaver, W. J.	Rt. 4, Asheville
Webb, B. G.	Andrews
Webb, W. P.	Rockingham
Wellborn, Wm. R.	Elkin
Wessell, John C.	Wilmington
*West, B. C.	Kinston
West, C. F.	Kinston
*West, Louis N., O.A.L.R.	Raleigh
West, Robert M.	Salisbury
*Wharton, L. D. (Hon.)	Smithfield
Wheeler, J. H.	Henderson
Whelpley, Frank L.	Goldsboro
*Whichard, M. P.	Edenton
*Whicker, Guy L.	Kannapolis
Whisnant, Albert N. (Hon.)	Charlotte
*Whitaker, A. C.	Julian
Whitaker, F. C.	Enfield
Whitaker, F. S.	Kinston
Whitaker, Paul F.	Kinston
*Whitaker, R. B.	Whiteville
White, John W. (Hon.)	Wilkesboro
White, R. A.	Asheville
White, Thos. P.	Charlotte
White, W. M.	Lenoir
*Whitehead, S. L.	Asheville
Whitehurst, E. B.	Beaufort
Whitfield, Wm. Cobb (Hon.)	Grifton
Whitley, Ayer	Matthews
Whitley, A. D. N.	Monroe
Whittington, Claude	Greensboro
Whittington, Jas. B.	Winston-Salem
*Whittington, W. W.	Snow Hill
Widenhouse, M. A.	Concord
Wier, J. E.	Asheville
Wiest, Paul F.	Asheville
Wilcox, J. W.	Patterson, N. J. (Scotland Co.)
Wilkerson, Charles B.	Raleigh
*Wilkerson, Charles E.	Greensboro
Wilkerson, J. B.	Rosman
Wilkes, Grover C.	Sylva
*Wilkes, Marcus B.	Laurel Hill
*Wilkins, J. C.	Haw River
Wilkins, J. W., O.A.L.R.	Mt. Olive
*Wilkins, R. B., O.A.L.R.	Raleigh
Wilkinson, C. T.	Wake Forest
Wilkinson, R. W., Jr.,	Wake Forest
Williams, Albert F.	Wilson
*Williams, Claude B.	Elizabeth City
Williams, James Marcus	Warsaw

Name	*Address*
*Williams, J. H.	Sanatorium
*Williams, John D., (Hon.)	Guilford Station
*Williams, L. L.	Asheville
*Williams, L. P.	Edenton
Williams, N. G.	Franklin
Williams, R. C.	Wallace
Williams, Wm. Norman	Tabor
Willis, A. P.	Candler
*Willis, B. C.	Rocky Mount
*Willis, H. C., O.A.L.R.	Wilson
*Wilson, Albert R. (Hon.)	Greensboro
Wilson, Clarence L.	Lenoir
*Wilson, N. G.	Madison
*Wilson, R. G.	Asheville
*Wilson, W. G.	Smithfield
Windley, R. E.	Washington
Wingate, G. C.	Charlotte
Winstead, J. A.	Nashville
Winston, A. R.	Franklinton
Wiseman, P. H.	Avondale
Wishart, Wm. E.	Charlotte
*Wolfe, H. C., O.A.L.R.	Greensboro
Wolff, D. R.	Greensboro
Woltz, John L.	Mt. Airy
Wood, J. W.	Boiling Springs
*Woodard, A. G., O.A.L.R.	Goldsboro
Woodard, C. A.	Wilson
Woodard, E. B.	Bayboro
Woodard, G. B.	Wilson
Woodard, J. G.	Asheville
*Woodcock, John H.	Hendersonville
Woodley, C. B.	Kinston
*Woodruff, Fred G.	High Point
Woodruff, Julian S.	Charlotte
Woodson, Charles W.	Salisbury
Woodward, J. G.	Asheville
Wooten, Amos Monroe	Pinetops
Wooten, W. I.	Greenville
*Wright, J. B., O.A.L.R. (Hon.)	Raleigh
Wright, O. E.	Winston-Salem
Wyatt, A. T.	Lillington
*Wyatt, H. L.	Greensboro
*Wyatt, Wortham	Winston-Salem
*Wylie, W. DeK.	Winston-Salem
*Yarborough, Frank R.	Cary
*Yarborough, R. F. (Hon.)	Louisburg
*Yoder, Paul A.	Sanatorium
*Yokeley, Raymond V.	Thomasville
*York, Alexander Arthur	High Point
York, Hugh B.	Williamston
Young, G. McD.	Postell
Young, L. B.	Wake Forest, R. 3
Younge, J. G.	Asheville
*Yow, I. A.	Concord

WOMAN'S AUXILIARY

TO THE

Medical Society of the State of North Carolina

PROCEEDINGS SEVENTH ANNUAL MEETING

GREENSBORO, APRIL 16 AND 17, 1929

OFFICERS FOR 1929-1930

President—MRS. G. H. MACON ..... Warrenton
President-Elect—MRS. W. B. MURPHY ..... Snow Hill
First Vice-President—MRS. A. B. HOLMES ..... Fairmont
Second Vice-President—MRS. J. L. SPRUILL ..... Jamestown
Third Vice-President—MRS. D. W. HOLT ..... Greensboro
Treasurer—MRS. R. F. WARREN ..... Prospect Hill
Corresponding Secretary—MRS. W. D. RODGERS ..... Warrenton
Recording Secretary—MRS. P. P. MCCAIN ..... Sanatorium

COUNCILORS

First District—To be supplied.
Second District—MRS. IRA HARDY ..... Kinston
Third District—MRS. G. C. BEARD ..... Atkinson
Fourth District—MRS. L. W. KORNEGAY ..... Rocky Mount
Fifth District—MRS. P. A. YODER ..... Sanatorium
Sixth District—To be supplied.
Seventh District—MRS. HENRY SLOAN ..... Charlotte
Eighth District—MRS. W. J. MEADOWS ..... Greensboro
Ninth District—MRS. J. L. SOWERS ..... Lexington
Tenth District—MRS. ALLEN T. HIPPS ..... Asheville

APRIL 14, 1929, 5:30 P. M.

EXECUTIVE BOARD MEETING

O. HENRY HOTEL

MRS. A. BRYAN HOLMES, PRESIDENT IN THE CHAIR

APRIL 15, 1929

CALLED TO ORDER

INVOCATION, DR. THOMPSON

Pastor West Market Street Methodist Church, Greensboro

ADDRESS OF WELCOME

By Mrs. W. P. Knight, Greensboro

I never tire of that word *welcome.*

It has a world of meaning in it when it comes from the heart, and I have gathered up a fresh supply of welcomes from all the hearts of the people of the Gate City, and have brought them to you this morning.

It is with peculiar pleasure that I bid you welcome, because you are the wives of *physicians.*

A person *may* make it through life without a preacher—a bad thing to attempt, I'll admit—but it *can* be done.

If one is fortunate, he can get through life without a lawyer unless he has something to will away when he dies.

One may even be able to get along without a school teacher, though they are generally regarded as necessities.

But a *doctor* must needs be on hand to hear the first cry that comes from the squirming little red morsel as he makes his advent into this world of woe, and he it is who is last to look into the tired eyes as they close for the last time.

You will agree with me, I'm sure, when I say that your husband and mine are about the most important folks in the world!

God knew what he was doing when he made a help-meet for Adam. He must have looked down through the centuries and beheld the long line of physicians it would take to heal the world's diseases, and then and there decreed that each doctor should have a wife.

Since, of necessity, this line of womanhood should descend from Eve, there was no guarantee given that said husbands would never get into trouble because of the woman God gave him—but if he didn't have her, where then would he put the blame for the calls he forgot to make?

Gladly do we stand within the shadow, waiting often through the night for the footstep of him who has fought for life, while others slept.

To you who know so well the joys and sorrows of the physician's wife, I give to you a welcome to Greensboro, a city rich in history and tradition, in monuments and memories,—a city whose thought and genius have enriched the literature of the world.

The city is yours today!

If welcomes were flowers, I'd give each of you a corsage rivaling in beauty the one you wore when you got married.

If human hearts were banquet halls, I'd welcome you to more than you could enter.

If heart strings were harp strings, you'd be welcomed with melodies sweet as celestial music.

If I were a sculptor, I'd chisel from marble my ideal of a man, and it would be a doctor, with his bag, ready to start out on his day of healing and cheer and comfort.

If I were an artist, I'd make the canvas eloquent with the picture of a woman with her soul in her eyes, waiting by the open fire, for her doctor husband to come home from his day's rounds.

If I were a musician, I'd melt the world to tears in singing of the sacrifice of the great army of doctors and surgeons who bring relief from suffering; and the refrain of every song would be a melody, breathing out the love and sympathy of the doctor's life partner—his wife!

Wives of physicians, making up the Auxiliary to the State Medical Society, I welcome you.

RESPONSE TO ADDRESS OF WELCOME

By Mrs. L. A. Crowell, Lincolnton

Madam Chairman, Ladies and Gentlemen!

It gives me unusual pleasure to respond to the address of welcome so graciously made by Mrs. Knight, for in Greensboro I have attended several conventions in the past as a delegate, among them the Woman's Missionary Society of the Methodist Church, the Woman's Club, and the United Daughters of the Confederacy—all different groups of women to be sure, but in each group we always find some of the same faces. So I have become attached to Greensboro as a great convention city. The North Carolina Medical Society has been entertained here a number of times too, and for the Woman's Auxiliary, I may say that its members can very well count themselves fortunate in accepting the lovely hospitality of Greensboro. We come to a city that is well known for its friendly and progressive people and for its industrial and social activities as well, and as for material comforts this city is second to none when it comes to ministering to our needs.

For the Woman's Auxiliary, I may say that it has ideals which as yet have not come into realization. It is, as I understand it, something vastly more than merely social and a getting together affair. And may we soon come into a full realization of all it means.

We all remember that it was a Greensboro doctor, the late Dr. J. W. Long, who was responsible for the organization of the Womans Auxiliary. I well remember the way he announced it. He said "There is going to be a baby born to the Medical Society, and that he would christen it 'The Womans Auxiliary.' " We thank you most graciously for your generous welcome.

Minutes of preceding meeting read and approved.

Roll call dispensed with, Mrs. J. Roy Hege took the chair.

PRESIDENT'S ADDRESS

By Mrs. A. Bryan Holmes, Fairmont

To the Ladies Auxiliary of the State Medical Association:

I bring you greetings today, and assurance of a hearty welcome. Since those early days in the Garden of Eden, when a deep sleep was caused to

fall on Adam (the first known use of an anesthetic!) and a rib was taken from his side (the first major operation, and to this day the most successful one) a woman has ever been man's side-partner, his help-meet, his auxiliary in all departments of life. However, there are indications that this organization which is before me will soon be no more; from the way you are forging ahead it is only a question of time before the State Medical Association will be composed of ladies, and men will have to content themselves with holding an overflow meeting as an auxiliary body.

Seriously, now, what is the task before you? I dare not say that I see your faces shining with enthusiasm, for then every single one of you would produce a powder puff and go to work, but I am convinced that you *are* enthusiastic and ready for any worthy task. I am going to try to give you my conception of your task by suggestion; in brief outline I shall tell you a story written by the immortal O. Henry—and it seems to me particularly fitting to bring to mind the writings of that genius, here in the O. Henry city.

A young art student studying in New York is stricken with pneumonia, far away from her California home. She is young and discouraged, and the disease is making rapid progress in her frail body. A friend comes in from the adjoining studio to nurse her, and sees Johnsy gazing fixedly out of the window. She is counting the leaves as they fall from a Virginia Creeper vine which had climbed upon a blank brick wall, twenty feet away. "When the last leaf falls, I must go, too," says Johnsy. The doctor comes and Sue, the artist friend, tells him what Johnsy has said. He says that recovery depends in large measure upon keeping up her courage; he has done everything that science can do. Old Behrman, a disappointed artist who has hoped always that someday he might paint a masterpiece, comes to pose for Sue in her studio, and she tells him of Johnys's strange fancy about the falling of the last leaf. Next morning when she shade is pulled up the leaf is still on the vine and Johnsy takes heart from the fact and determines to get well. It is only when she is out of danger that she learns that old Behrman himself has died of pneumonia—he went out in the cold rain that night and painted a bright leaf upon the brick wall so that when Johnsy looked out next morning the last leaf would not have fallen. After all, he painted his masterpiece.

Ladies of the auxiliary, the masterpiece you are so eager to do may not be of the spectacular variety. You may not paint a masterpiece which will hang in one of the great galleries of the world, but each one of you may achieve one, if you are willing to sacrifice your comfort, your ambition, your life if necessary, in the service of humanity. "All things are possible to him who believes; they are less difficult to him who hopes; they are easy to him who loves."

The President resumes the chair.

1. Trials and Pleasures of Past Year.
2. Hopes for Coming Year.

3. Appointment of Committee from the Medical Society of the State of North Carolina to serve in an advisory capacity with the Auxiliary Board: Dr. A. B. Holmes, Fairmont, Dr. James M. Northington, Charlotte, Dr. Cyrus Thompson, Jacksonville.

4. Recommends appointment of similar advisory committees for local auxiliaries.

5. Auxiliary to Southern Medical Association hopes to erect a memorial to the memory of Jane Todd Crawford, pioneer heroine of anesthesia and surgery.

6. Robinson County child being kept at State Sanatorium by this Auxiliary.

Greeting from the Medical Society of the State of North Carolina by the President, Dr. Thurman D. Kitchin, of Wake Forest.

UNFINISHED BUSINESS

Mrs. R. S. McGeachy, Kinston, chairman committee on Revision of Constitution, made the following report which was adopted:

Article III

Section 2. In counties where there is no organization, ladies may become members by paying $1.00 dues annually to the State Treasurer.

Article VI

Section 1. Councilors shall be elected for three years.

Section 2. President shall appoint the nominating committee, which shall be composed of five (5) members, no two of whom shall be from the same county.

Article IX

Section 1. Each County Auxiliary shall pay dues annually to the State Auxiliary at the rate of $1.00 per capita.

NEW BUSINESS

It was agreed that the Junior Past President should automatically become First Vice-President for a term of one year, and it was suggested that the Constitution and By-Laws be so amended.

REPORT OF COUNCILORS

Second District. Lenoir, fourteen paid members.

Third District. Three counties organized, New Hanover, Brunswick and Pender.

Fifth District. Robeson, Cumberland and Hoke organized. Hoke County Auxiliary being the only county in the State to have 100 per cent membership.

Sixth District. Little work done.

Eighth District. Twelve members paid. Burlington Auxiliary sent magazines and books to State Sanatorium.

Delegate to Auxiliary American Medical Association, Mrs. M. L. Stevens, Asheville, was not present at this time and the matter of her report was passed over.

Report of Delegates to the Auxiliary of the Southern Medical Association was made by our President, Mrs. A. Byron Holmes.

At this time the President announced an address by the President of the Auxiliary to the American Medical Association and presented Mrs. Allen Bunce, of Atlanta, Ga., who delivered a most delightful and instructive address. She stressed the following points:

1. The history of the Auxiliary beginning with its birth at Dallas, Texas.

2. Educate yourselves to the great possibilities of a doctor's wife.

3. Improve yourselves by: using outlined courses of study, having periodic or annual health examinations and by making surveys. Aid parent teachers associations and health departments of women's clubs.

4. Accumulate a fund for helping people in need, for example, patients, medical students, pupil nurses, etc.

5. She urged that all money sent to State and National Headquarters have names to correspond to amount of money sent in.

REPORT OF NOMINATING COMMITTEE

Mrs. R. S. McGeachy, past President, read the report of the Nominating Committee, which was adopted by a unanimous vote, as follows:

OFFICERS FOR 1929-30

President—Mrs. G. H. Macon ..... Warrenton
President-Elect—Mrs. W. B. Murphey ..... Snow Hill
First Vice-President—Mrs. A. B. Holmes ..... Fairmont
Second Vice-President—Mrs. J. L. Spruill ..... Jamestown
Third Vice-President—Mrs. D. W. Holt ..... Greensboro
Treasurer—Mrs. R. F. Warren ..... Prospect Hill
Corresponding Secretary—Mrs. W. D. Rodgers ..... Warrenton
Recording Secretary—Mrs. P. P. McCain ..... Sanatorium

The new officers were then presented.

Mrs. R. S. McGeachy, Past President, Kinston, presented a five dollar gold piece to Mrs. P. A. Yoder, Sanatorium, Councilor for the fifth District as an award for having done the most and best work in her District during the past year. She also announced that the award holds good for the new year.

Mrs. G. H. Macon, President, was appointed as delegate to the next session of the Woman's Auxiliary to the American Medical Association. Mrs. G. H. Macon, the new President, made some appropriate remarks and urged more and better work during the year.

FINANCIAL REPORT

THE WOMAN'S AUXILIARY TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

April 15, 1929

Total receipts			$295.00
Disbursements:			
Refund Mrs. Cheatham		$ 5.50	
Printing		11.00	
Dues Southern Medical Ass'n, Mrs. West, Treas.		7.00	
Postage on printing		1.00	
Paid Dr. P. P. McCain for bed at State Sanatorium	$ 30.00		
	193.50	223.50	
American Medical Ass'n dues		47.00	295.00
Balance			000.00

Mrs. Robert F. Warren,
Treasurer.

Report approved.

WEDNESDAY, APRIL 17, 10 A. M.

The Executive Board, composed of the new officers, held a session at the O. Henry Hotel.

Mrs. Allen Bunce, President of the Woman's Auxiliary to the American Medical Association, presented a gavel to the Auxiliary to the Medical Society of the State of North Carolina, and a gavel to the Woman's Auxiliary to the Guilford County Medical Society. The idea was no doubt prompted by the conspicuous absence of a gavel during our meeting.

Respectfully submitted,

Mrs. P. P. McCain,
Recording Secretary.

Approved: Mrs. A. Byron Holmes, President.

PAST PRESIDENTS

1923—Mrs. P. P. McCain (organizing chairman) ..... Sanatorium
1924—Mrs. P. P. McCain ..... Sanatorium
1925—Mrs. I. W. Faison ..... Charlotte
1926—Mrs. J. Howell Way ..... Waynesville
1927—Mrs. R. S. McGeachy ..... Kinston
1928—Mrs. B. J. Lawrence ..... Raleigh
1929—Mrs. A. B. Holmes ..... Fairmont

ROSTER OF MEMBERS

Austin, Mrs. J. W.....High Point
Ashworth, Mrs. W. C.....Greensboro
Anderson, Mrs. C. A.....Burlington
Adams, Mrs. L. C.....LaGrange
Adams, Mrs. R. K.....Raleigh
Allen, Mrs.....Henderson
Abernathy, Mrs. C. O.....Raleigh
Averitt, Mrs. K. G.....Ceder Creek
Baker, Mrs. C. D.....Lumberton
Beam, Mrs. R. S.....Lumberton
Boney, Mrs. Elwood.....Kinston
Brown, Mrs. J. P.....Fairmont
Brooks, Mrs. R. E.....Burlington
Bethune, Mrs. A. T.....Raeford
Bittinger, Mrs. S. M.....Sanatorium
Byerly, Mrs. W. G.....Sanatorium
Brittle, Mrs. P. C.....Burlington
Broadway, Mrs. R. E.....Southport
Brown, Mrs. G. W.....Raeford
Battle, Mrs. I. P.....Rocky Mount
Beard, Mrs. G. C.....Atkinson
Barker, Mrs. E. M.....Macclesfield
Beckwith, Mrs. R. Payne.....Rosemary
Boice, Mrs. E. S.....Rocky Mount
Buchanan, Mrs. E. G.....Lexington
Buie, Mrs. R. M.....Greensboro
Brockman, Mrs. Harry.....High Point
Burrus, Mrs. J. T.....High Point
Burres, Mrs. D. A.....High Point
Bulla, Mrs. A. C.....Raleigh
Browning, Mrs.....Rocky Mount
Cheatham, Mrs. Goode.....Henderson
Carrington, Mrs. Geo. L.....Burlington
Curry, Mrs. D. S.....Parkton
Clodfelter, Mrs. C. M.....Lexington
Cole, Mrs. W. F.....Greensboro
Coe, Mrs. S. C.....High Point
Cobb, Mrs. D. B.....Goldsboro
Coates, Mrs. E. A., Jr.....Fort Bragg
Dosher, Mrs. A. R.....Southport
Daughtridge, Mrs. A. L.....Rocky Mount
Dixon, Mrs. W. H.....Rocky Mount
Davis, Mrs. R. B.....Greensboro
Dees, Mrs. Rigdon.....Greensboro
Dick, Mrs. J. A.....Gibsonville
Dewar, Mrs. W. B.....Raleigh
Dawson, Mrs. W. E.....Hookerton
Dillon, Mrs. W. H.....Kinston
Elliott, Mrs. Avon.....Wilmington
Flagge, Mrs. P. W.....High Point
Farthing, Mrs. L. E.....Wilmington
Foster, Mrs.....Norlina
Ferguson, Mrs. H. P.....Halifax
Fox, Mrs. N. A.....Stokesdale
Gilmore, Mrs. C. M.....Greensboro
Gamble, Mrs. G. C.....Lexington
Green, Mrs.....Nash Co.
Green, Mrs. W. W.....Tarboro
Holmes, Mrs. A. Byron.....Fairmont
Harper, Mrs. J. H.....Snow Hill
Hines, Mrs. E. R.....Rocky Mount
Hooper, Mrs. J. W.....Wilmington
Hoggard, Mrs. J. T.....Wilmington
Harrell, Mrs. L. N.....Tarboro
Hunt, Mrs. W. B.....Lexington
Harden, Mrs. Norman.....Greensboro
Holt, Mrs. W. D.....Greensboro
Hudson, Mrs. C. C.....Greensboro
Hicks, Mrs. V. M.....Raleigh
Hester, Mrs. J. R.....Wendell
Hunter, Mrs. F. P.....Warrenton
Holt, Mrs. T. J.,.....Warrenton
Hege, Mrs. J. Roy.....Winston-Salem
Highsmith, Mrs. Seavey.....Fayetteville
Harden, Mrs. Graham.....Burlington
Harrison, Mrs. E. T.....High Point
Highsmith, Mrs. J. F.....Fayetteville
Hardy, Mrs. Ira M.....Kinston
Ivey, Mrs. H. B.....Goldsboro
Jarrow, Mrs. F. G.....Roanoke Rapids
Justice, Mrs. L. H.....Nash Co.
Jennings, Mrs. R. G.....Thomasville
Johnson, Mrs. H. L.....Greensboro
Jennings, Mrs. Casper.....Greensboro
Jackson, Mrs. W. L.....High Point
Johnson, Mrs. T. C.....Lumberton
Jenkins, Mrs. C. L.....Raleigh
Judd, Mrs. C. E.....Raleigh
Judd, Mrs. J. M.....Varina
Jordon, Mrs. W. S.....Fayetteville
Kieger, Mrs. J. A.....Greensboro
Larkin, Mrs. E. W.....Hickory
Lee, Mrs. S. E.....Sanatorium
Lane, Mrs. J. L.....Rocky Mount
Lassiter, Mrs. H. G.....Weldon

Lucus, Mrs. P. E. ..... Burgaw
Lancaster, Mrs. F. J. ..... Lexington
Lyons, Mrs. Brockton ..... Greensboro
Long, Mrs. C. F. ..... High Point
Long, Mrs. T. W. M. ..... Roanoke Rapids
Leggett, Mrs. T. N. ..... Hobgood
Kornegay, Mrs. L. W. ..... Rocky Mount
Knowls, Mrs. V. L. ..... Rocky Mount
Koonse, Mrs. S. E. ..... Wilmington
McMillon, Mrs. R. D. ..... Red Springs
Moser, Mrs. W. D. ..... Burlington
McPherson, Mrs. C. W. ..... Burlington
Montgomery, Mrs. H. M. ..... Burlington
McCain, Mrs. P. P. ..... Sanatorium
McNeal, Mrs. J. W. ..... Fayetteville
McFayden, Mrs. O. L. ..... Fayetteville
McKay, Mrs. P. W. ..... Fayetteville
Marsh, Mrs. J. W. ..... Fayetteville
Moore, Mrs. H. P. ..... Graham
Murray, Mrs. R. L. ..... Raeford
Murphy, Mrs. W. B. ..... Snow Hill
Murphy, Mrs. J. G. ..... Wilmington
Murchinson, Mrs. David ..... Wilmington
Moore, Mrs. Huston ..... Wilmington
Martin, Mrs. John W. ..... Roanoke Rapids
Mitchell, Mrs. Z. P. ..... Enfield
McGeachey, Mrs. R. S. ..... Kinston
McCuiston, Mrs. A. M. ..... Kinston
Meadows, Mrs. W. J. ..... Greensboro
Moore, Mrs. Charles ..... Greensboro
Mann, Mrs. I. T. ..... High Point
McCain, Mrs. W. R. ..... High Point
McAnnally, Mrs. W. J. ..... High Point
Miller, Mrs. R. B. ..... Goldsboro
Mangum, Mrs. C. P. ..... Kinston
Macon, Mrs. G. H. ..... Warrenton
McGee, Mrs. J. W. ..... Raleigh
Mitchiner, Mrs. J. S. ..... Raleigh
Night, Mrs. W. P. ..... Greensboro
Newell, Mrs. ..... Henderson
Nicholson, Mrs. B. M. ..... Enfield
Owenby, Mrs. A. D. ..... Greensboro
Orr, Mrs. J. W. B. ..... Smithfield
Olive, Mrs. P. W. ..... Fayetteville
Paddison, Mrs. J. R. ..... Kernersville
Powell, Mrs. William ..... Fayetteville
Parker, Mrs. F. M. ..... Weldon
Pittman, Mrs. R. L. ..... Fayetteville
Peery, Mrs. V. P. ..... Kinston
Peice, Mrs. S. B. ..... Weldon
Post, Mrs. J. J. ..... Greensboro
Pearson, Mrs. H. O. ..... Pine Tops
Peete, Mrs. C. H. ..... Warrenton
Phillips, Mrs. Chas. B. ..... Thomasville
Robertson, Mrs. J. Newton ..... Fayetteville
Rainey, Mrs. William T. ..... Fayetteville
Raby, Mrs. J. G. ..... Tarboro
Reitzel, Mrs. C. E. ..... High Point
Royster, Mrs. F. S. ..... Weldon
Royster, Mrs. T. S. ..... Roanoke Rapids
Reaves, Mrs. Charles ..... Greensboro
Rhudy, Mrs. P. E. ..... Greensboro
Rose, Mrs. D. J. ..... Goldsboro
Royster, Mrs. ..... Henderson
Rogers, Mrs. W. D. ..... Warrenton
Rogers, Mrs. J. R. ..... Raleigh
Smoot, Mrs. M. L. ..... Weldon
Spoon, Mrs. S. C. ..... Graham
Shaw, Mrs. Calvin ..... Atkinson
Suiter, Mrs. W. G. ..... Weldon
Smithwick, Mrs. J. W. P. ..... Kinston
Speight, Mrs. Ambler ..... Rocky Mount
Sidbury, Mrs. Van Buren ..... Wilmington
Smith, Mrs. J. A. ..... Lexington
Sharpe, Mrs. C. R. ..... Lexington
Sowers, Mrs. J. L. ..... Lexington
Smith, Mrs. W. G. ..... Lexington
Sharpe, Mrs. Frank ..... Greensboro
Spoon, Mrs. A. O. ..... Greensboro
Sumner, Mrs. E. D. ..... High Point
Smith, Mrs. Owen ..... High Point
Spruill, Mrs. J. L. ..... Jamestown
Smith, Mrs. William H. ..... Goldsboro
Smith, Mrs. R. A. ..... Goldsboro
Spicer, Mrs. John ..... Goldsboro
Sisk, Mrs. C. N. ..... Raleigh
Stephens, Mrs. M. L. ..... Asheville
Thorpe, Mrs. A. L. ..... Rocky Mount
Thigpen, Mrs. W. G. ..... Tarboro
Terry, Mrs. J. R. ..... Lexington
Taylor, Mrs. Wesley ..... Greensboro
Thomas, Mrs. J. T. ..... Greensboro
Taylor, Mrs. F. R. ..... High Point
Troxler, Mrs. R. M. ..... Burlington
Taylor, Mrs. W. I. ..... Burgaw
Upchurch, Mrs. ..... Henderson
Verdery, Mrs. W. Carey ..... Fayetteville
Vestal, Mrs. W. J. ..... Lexington
Warren, Mrs. R. F. ..... Prospect Hill
Williams, Mrs. J. A. ..... Sanatorium

Watson, Mrs. T. N.....Wilmington
Whittington, Mrs. W. W.....Snow Hill
Willis, Mrs. B. C.....Rocky Mount
Wimberly, Mrs. V. L.....
Wooten, Mrs. A. M.....Pinetops
Weathers, Mrs. Bahnson
Roanoke Rapids
White, Mrs. F. W. M.....Roanoke Rapids
Wooten, Mrs. F. P.....Kinston
Weathers, Mrs. P.....Rosemary
Walker, Mrs. W. E.....Burlington
Wilkins, Mrs. J. W.....Mt. Olive
Wilkinson, Mrs. R. W.....Wake Forest
Wilkinson, Mrs. C. T.....Wake Forest
Wilkinson, Mrs. C. D.....Raleigh
York, Mrs. A. A.....High Point
Yoder, Mrs. P. A.....Sanatorium
Zollicoffer, Mrs. D. B.....Weldon

PROGRAM OF ENTERTAINMENT

REGISTRATION APRIL 15, O. HENRY HOTEL

8:30 P. M. State President's Reception, Greensboro Country Club.

APRIL 16—TUESDAY

8:30 A. M. President's Breakfast, O. Henry Hotel.

5:00 P. M. Tea, High Point Country Club, High Point Auxiliary Members Hostesses.

6:00 P. M. Dinner at Sedgefield, Pilot Mountain Life Insurance Company Host to Auxiliary and the Medical Society of the State of North Carolina.

9:00 P. M. Medical Society Ball—Ball Room O. Henry Hotel.

APRIL 17—WEDNESDAY

1:00 P. M. Luncheon in honor of Mrs. Allen H. Bunce, President Woman's Auxiliary to American Medical Association, Florentine Room, King Cotton Hotel.

2:30 P. M. Bridge and Rook, Mezzanine, King Cotton Hotel.

TRANSACTIONS

OF THE

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

NINETEENTH ANNUAL SESSION

GREENSBORO, N. C., MONDAY, APRIL 15, 1929

The North Carolina Public Health Association met in the auditorium of the Pilot Life Insurance Company, Sedgefield, Greensboro, at 10:30 A. M., and was called to order by the President, Dr. C. C. Hudson, Greensboro.

The invocation was said by the Reverend Charles F. Myers, of Greensboro.

President Hudson: We are meeting here today as guests of the Pilot Life Insurance Company. As you know, there are several life insurance companies that are of great help to us in our work. There are several organizations which are particularly helpful—the Metropolitan Life Insurance Company and others. The Pilot Life Insurance Company is the only one in the South that is doing this work. At this time I wish to introduce Dr. L. A. Riser, of the Pilot Life Insurance Company, who will give us a word of welcome.

Dr. L. A. Riser, Director of Health Conservation, Pilot Life Insurance Company: I think it is particularly fitting that the North Carolina Public Health Association should have its meeting in the auditorium of the Pilot Life Insurance Company, because the Pilot Life Insurance Company is a pioneer in health work. About twenty years ago the Pilot Life Insurance Company started having periodic examinations of its policyholders. Mr. McAlister was the father of the idea. Our building itself carries out the idea of public health work. It has lots of windows to admit light and air, and other things which are the idea of Mr. McAlister to preserve the health of our employees. These Mr. McAlister will tell you about, and I now present Mr. McAlister.

A WORD OF WELCOME TO THE NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

By A. W. McAlister

President Pilot Life Insurance Company

Speaking in behalf of the executives and the staff of the Pilot Life Insurance Company, we consider it a privilege to have the North Carolina Public Health Association meet with us, and it is a pleasure to us to have

this opportunity to express our appreciation of the great public service you are rendering in the prosecution of your work. There is a vast significance and importance in the task to which you have set yourselves, and the contribution you are making to the increase of the assets of human living is beyond computation.

You may be interested to know that the Pilot Life Insurance Company is also engaged in public health service and has been engaged in this service for many years, the Pilot Life being the first company in the world, so far as we know, to provide physical examination for its policyholders by a medical representative of the Home Office. This service has proved to be of great value to the policyholders and in some instances of value that it would be difficult to estimate. It has also proved valuable to the company as a builder of good will and by way of education in those things which tend to prolong life.

You may be interested to know also that the Pilot Life Insurance Company is engaged in a health service for the members of its staff. One of the foremost considerations in the planning of the offices which we now occupy was the health of the workers who occupy these offices. The window glass in every office is an especially made glass, known as Vita Glass, which transmits the vital ultra-violet rays of the sun. A ventilating system forces into every working space of the plant in continuous volume the outside, untreated air, producing an interior atmosphere which seems to be almost the equivalent of the outside. The water that is used for drinking purposes comes from a bored well through solid rock for the most part at a depth of 339 feet and is safeguarded so as to be practically immune to contamination. Thus we have at their best these three essentials of good health—sunlight, pure air, and pure water.

We moved from the city of Greensboro into these buildings about the middle of September, 1928. The improvement in the health of our staff has been so marked that it can not escape the most casual observer. It is reflected in the very countenances of the people who work here; in their complexion and in their general appearance of well-being. It is also reflected in actual figures. Excluding absences on account of influenza during the past winter, the number of people absent during the first six months of the occupancy of these buildings as compared with the corresponding six months of the previous year showed a reduction from 87 to 67, being equivalent to a reduction of 23 per cent; and the number of days of absence for the same period showed a reduction from 350 to 157, being equivalent to a reduction of 55 per cent. We have some statistics which, on account of the limited time, may not be conclusive but yet are impressive. There has been observation of 81 persons, practically all underweight. Of this number 70 have gained weight, 7 have remained stationary, and only 4 have lost weight, the average gain being 3.42 pounds per person. The oldest member of the staff, who has always been underweight, has shown an average gain of two pounds per month.

We believe that the people who work for us are entitled to the best working conditions from a health standpoint that can be provided, and we are convinced further that whatever we invest in this direction yields actual dividends in clear-headedness and effectiveness which amply justify the investment.

In conclusion, may I express again our pleasure in your presence and the hope that you will make yourselves at home?

ADDRESS OF WELCOME

By Hon. E. B. Jeffress
Mayor of Greensboro

We are mighty glad to have this gathering of health workers meet in Greensboro and in Guilford County. I say the county because we have come to view things in Greensboro and in our section here not by mere city boundaries but by the territory of which we are common owners, so far as the local government is concerned.

We have done many things in this section in a public health way that I think will prove interesting to you. Mr. McAlister has just told you of the reasons why he desired to come out to this beautiful spot, in this wide expanse, and build this splendid home for his insurance company. We are looking to health considerations in all things. I think Guilford County has been very notable for its advances in public health. To reminisce for a moment, I believe it was in 1913 that Guilford established the first all-time health officer in the State of North Carolina. We have believed here that there is a very vital connection between our duty as citizens and our duty in a governmental way to preserve the public health. This is exemplified by the advanced work that we are doing in our city and in our county schools. We are financing our health work here by the city schools and the city of Greensboro jointly contributing toward the maintenance of this health department, and perhaps the most effective work that our department is doing is in the schools. We realize that an able body is the first requisite before you can have an active mind in a child; consequently we have gone a long way in removing tonsils and adenoids and having a full-time dentist and other work in connection with our schools. We think the work has paid. The city and county contribute toward tonsil operations when it is not possible for these operations to be performed otherwise. I want to say that the physicians of Greensboro and Guilford County have cooperated with us wonderfully in this sort of work, and I think they have no cause for complaining that the government is interfering with their private practice. As a matter of fact, I believe the number of physicians in Greensboro has vastly increased, and I think all of them are keeping pretty busy. It is getting the public to understand the value of caring for themselves in all respects that is really not only making a healthier community but making more business for those engaged in teaching us how to keep healthy, because we get the public aroused.

One of the notable things in the history of health work in this community is the establishment of our county tuberculosis sanatorium. It is doing very notable work under the direction of Dr. Spruill, and I know Dr. Spruill and the county health officer will be glad to have you visit it before you leave.

I do not believe it is worth while this morning for me to give an oration about the glories of Greensboro and Guilford county. They are here to speak for themselves. But the reason that we have been able to accomplish so many things for the public good is that we have a united public spirit which has made it possible for us to find out what our proper relations are, and when we find out that then we start to find out the answer.

We speak of our roads and speak of our schools and all those things you can see with your eyes, but the full story of the glory of public health work in North Carolina has yet to be written. It is because of you men daily on the firing line throughout this state, fighting contagious diseases, eliminating impure water supplies, curtailing typhoid, inspecting the dairies, inspecting our food products, and doing other things too numerous to mention—it is because, as I say, of the activities of the public health men of North Carolina that this State has truly become a great place in which to live, not only in the mountains, not only in the piedmont, but in eastern Carolina, where we have learned how to control malaria and other devitalizing diseases that are preventable. So, gentlemen, the real story of North Carolina, when it is written, must have a great chapter and a wonderful tribute to the men of the health service. You deserve a share in the glories of this new North Carolina. It is because of the public health men that we have been able with safety to invite people to settle in any part of our state with the assurance that their health will be protected. I believe the other day Governor Gardner said if he had any criticism to make of the legislature of North Carolina it was because too many of the representatives look at matters from a county-wide viewpoint only. I tell you we have never accomplished anything in this State that was really worth while unless we have gone at it with a broad vision and on a statewide basis, and I want to see public health work grow and expand; I want to see us keep on with the splendid work that we have started (because we have just scratched the surface) until we build here a state superior to any anywhere.

Gentlemen, I want to extend to you in behalf of the citizens of Greensboro and Guilford County a hearty welcome and to tell you that we are mighty glad to have you come here. I believe there are a number of things that you will find of interest. We have done noteworthy work in the dairying line. Let me pause just to tell you that we have found real agricultural relief in Guilford County by enforcing our dairying regulations. We went on the standard ordinance about four years ago. At that time there was real opposition to it on the part of the farmers, and at that time the per capita milk consumption was very low in this territory.

People did not have confidence in it. But we have adopted our ordinances and enforced them, and that has meant that every dairy had to come up to a certain standard. When they did that, they created public confidence in our milk supply, and now our dairies can hardly produce enough milk, even though they are on a greatly enlarged basis, to supply the demand. Every farmer that has gone into this dairying business on the right sort of basis is making money and is improving his land and is proving that these red hills up here are as productive as any soil anywhere. In that way you are solving the farm problem when you are creating cities large enough to consume the products of the land around them, and that is the only basis, I believe, on which the problem will be solved.

Gentlemen, we are glad to have you here with us this morning. I assure you I shall do all I can and I am sure Dr. Hudson will do all he can to make your meeting pleasant and profitable. I wish you, in conclusion, Godspeed in the noble work you are doing for this State.

PELLAGRA—WHAT CAN WE DO ABOUT IT?

By C. C. Hudson, M.D., Greensboro

Pellagra which had been causing many deaths in North Carolina prior to 1918 declined rapidly in the era of high wages and prosperous living conditions which followed the World War and one of the scourges of this State seemed well on the road to extinction. The death rate gradually declined from the peak of 35.0 per 100,000 population in 1915 to less than one-fourth of this death rate—8.3 per 100,000 population in 1923. Since 1923, however, the death rate from this cause has been steadily climbing until in 1928 the rate was 28.8 per 100,000, the highest death, rate, with the exception of 1915, which has been recorded.

DEATHS AND DEATH RATES FROM PELLAGRA IN NORTH CAROLINA

Year	Deaths	Rate per 100,000
1914	551	23.5
1915	831	35.0
1916	467	19.4
1917	605	24.8
1918	634	25.7
1919	381	15.2
1920	297	11.6
1921	331	12.6
1922	306	11.5
1923	224	8.3
1924	273	10.0
1925	398	14.1
1926	459	16.0
1927	688	23.7
1928	847	28.8

If we study the admissions to our State insane hospitals as a result of pellagra we can also note a very decided increase. The colored hospital at

Goldsboro reports an increase from 27 to 59 patients admitted last year as a result of this disease. The deaths at Dix Hill showed an increase from 4 during the two-year period, 1924-26, to 18 for the last biennium, and undoubtedly Morganton would show the same result.

The United States Public Health Service estimates that there are about 33 cases of pellagra for each death. If this estimate be true, there must have been about 28,000 cases of pellagra in North Carolina during the last year. If there were this many active cases, there must have been many other individuals whose vitality was considerably lowered, but on account of the absence of sufficient pellagra preventive substance in their diet, who did not show active symptoms of the disease.

Pellagra deaths occur in all months in the year but are least prevalent during the winter and spring months. July showed most deaths last year—122 having occurred in that month while only 29 occurred in February, which showed the fewest deaths. About 65 per cent of all deaths occurred during the months from June to November, inclusive. This is about what we would expect from a chronic wasting disease, such as pellagra, which shows a big increase in cases during April and May when we have more sunshine.

Of the total deaths reported last year 53 per cent were white and 47 per cent colored. The death rate among negroes was therefore much higher than among white people, as negroes only constitute about 29 per cent of our total population.

From the standpoint of sex it was found that 72 per cent of all deaths were females. The preponderance of colored females over males was somewhat larger than whites, being 77 per cent of all deaths among negroes while 68 per cent of all deaths among whites were females.

It was found that males die from pellagra at a much later period in life than females; 29.5 per cent of all white males to die in North Carolina last year of pellagra were under 50 years of age while 55.4 per cent of all white females who died from this cause were below 50. As would be expected, negroes were found to die at an earlier age than white people. 48.3 per cent of colored males to die from pellagra were below 50 years of age while 77.6 per cent of negro women to die of pellagra were below 50 years of age. The youngest age at which any one died from pellagra last year was 2 months and 5 days. There were 15 deaths of children under 10 years of age and 33 deaths of persons between the ages of 10 and 19, most of these being negro females from 15 to 20 years of age. It can thus be seen that pellagra is taking its heaviest toll at the most productive period of life—between the ages of 15 and 50 years.

Nearly one-half of all those who died from pellagra last year gave housework as their chief occupation. Farming was the next occupation in importance. Nearly one-fifth of all who died had no occupation. Thirty-three gave common labor as the principal occupation. From the investigation of the United States Public Health Service among factory employees we would have expected more deaths than were reported among people so

employed. Only 15 deaths were reported by persons employed in the textile trade, while 8 people who were employed in tobacco factories died from this cause. A number of other occupations were represented among those who died from pellagra, from one to three persons having died among carpenters, brick layers, ministers, teachers, fishermen and others.

In studying the distribution of pellagra it is interesting to note that there are six counties in the State that had no deaths from this cause last year, while 21 counties had only one death each from pellagra and seven others had only two deaths. The death rate from pellagra was very much above the average for the State in Cumberland, Durham, Henderson, Mecklenburg, Gaston, Union, Warren and Hoke counties. As a whole the Seaboard counties have comparatively low death rates, while two of the mountain counties—Watauga and Ashe—had no deaths from this cause. It would be interesting to find out just why a county like Pitt, with a large population, should have only five deaths, while Durham county, with a population very slightly, if any larger, should have six times as many. Further studies are certainly indicated along this line.

Due to the wonderful research work carried on by Dr. Goldberger and others of the United States Public Health Service we now know the cause of pellagra and how it may be prevented. We know that it is a disease due to a deficiency of a certain food element which Goldberger and his associates have designated as a pellagra preventive substance. The absence of this element in the food is also responsible for blacktongue in dogs. This discovery has enabled research workers to conduct much more careful experimental work. It has been found that this element is most abundant in lean meat, liver and salmon. Dried yeast is exceedingly rich in this substance. The protein of milk carries a fair amount of it. A small quantity is also found in eggs, tomatoes, cow peas, whole wheat flour, rutabagas, and a little in butter. The amount is very small, or absent, in corn meal, white flour, fat meats, sweets and sweet potatoes. Many other foods have not been given careful, complete tests to determine just how much of this substance they contain. Further research is certainly needed along this line and I sincerely trust that the United States Public Health Service will continue the very careful investigation which it has been making along this line.

Knowing the cause of pellagra, its prevalence in certain areas and among certain groups of people, what can we do about it? The answer to this question is more difficult, as it involves many changes in economic conditions and dietetic habits of a large class of our people who are most difficult to reach. It would seem, however, that with proper coordination of our work much could be accomplished for the reduction of the prevalence of this horrible disease. As pellagra is so closely associated with our general meat and protein supply and eating habits, it would seem that any campaign for its eradication should be carried on by the State Health Department, medical profession, the State Department of Agriculture, through its agents, and our public schools, through the home economics

teachers. Through these various agencies the following measures, a part of which have already been started and partly completed, should be carried on:

First, a continued investigation by the United States Public Health Service of the research work which it has been doing into the etiology, prevalence and the pellagra preventive action of our foods.

Second, investigation by our State Health Department into the reasons why pellagra is more prevalent in certain counties and parts of the State than in others. It should also head a campaign through the medical profession, the local health authorities, the State Department of Agriculture, the home economics teachers and others for the education of the public in this State as the means for the prevention of pellagra. A campaign of this kind, based upon our present knowledge of etiology and cause of pellagra must take certain trends:

(a) More lean meat, fish, liver, milk, and other animal foods in the diet of our people, especially among the laboring class and our farmers. Every means to stimulate the production of milk, livestock, and chickens on the farms should be used. More diversified farming in certain areas of the State would seem to be one of the things which should be encouraged.

(b) As many of our deaths from pellagra are among people over 50 years of age, it is especially important that all older people should be given regular annual examinations by physicians and their diets properly supervised.

(c) As it is well known that there is a tendency to relapse in cases of pellagra, due to the fact that they soon return to their diets which caused the first attack, all cases of this disease should be reported to Health Departments for follow-up instructions from nurses and dietetic workers in the home. Most of the cases are among people who will not return to the physician unless urged by some one to do so. These cases should all be followed up during the winter when they are most apt to return to their old diets.

(d) A careful watch should be kept on our school children during the late spring and summer months so as to discover any children showing symptoms of the disease so that these families may be gotten under the care of a physician before the disease has progressed too far for a cure.

(e) The public should be educated in every way possible to see a physician upon the least indication of pellagra. Many of our cases go on for years before going to a physician when if taken early the disease could very easily have been cured.

Pellagra is a preventable and a curable disease. It behooves us all to do all possible to eradicate it.

I desire to acknowledge the kind assistance rendered by Dr. F. M. Register, our State Registrar of Vital Statistics, in supplying a part of

the information used in this paper, and also Dr. Clyde M. Gilmore, Greensboro, for assistance which he rendered in supplying certain information.

ANNUAL REPORT OF SECRETARY

By F. M. Register, M.D., Raleigh

The eighteenth annual session of the North Carolina Public Health Association met in Pinehurst at the Carolina Hotel, April 30, 1928.

Dr. John H. Hamilton, President, Wilmington.

Dr. C. C. Hudson, Vice-President, Greensboro.

Dr. F. M. Register, Secretary, Raleigh.

The following committees were appointed:

On President's Address—Dr. L. J. Smith, Dr. R. L. Carlton, and Dr. L. J. Corbett.

On Visitors and New Members—Dr. R. L. Carlton, Dr. J. A. Morris, and Dr. R. E. Broadway.

On Resolutions—Dr. A. C. Bulla, Dr. E. R. Hardin, and Dr. J. H. Woodcock.

Program Committee—Dr. A. C. Bulla, Dr. J. R. Hege, Dr. Chas. O'H. Laughinghouse, Dr. L. J. Smith, Dr. C. C. Hudson, and Dr. F. M. Register.

After a most interesting meeting, at which many valuable papers were read and discussed, the following officers were elected:

President, Dr. C. C. Hudson, Greensboro.

Vice-President, Dr. J. R. Hege, Winston-Salem.

Secretary, Dr. F. M. Register, Raleigh.

The North Carolina Public Health Association adjourned to meet in Greensboro, April 15, 1929.

F. M. Register, M.D.,
Secretary.

APPOINTMENT OF COMMITTEES

The following committees were appointed:

Committee on the President's Address: Dr. J. H. Epperson, Durham; Dr. C. N. Sisk, Raleigh; and Dr. J. H. Hamilton, Wilmington.

Committee on Visitors and New Members: Dr. R. L. Carton, Winston-Salem; Dr. E. R. Hardin, Lumberton; and Dr. D. E. Ford.

Resolutions: Dr. L. J. Smith, Wilson; Dr. C. W. Armstrong, Salisbury; and Dr. R. S. McGeachy, Kinston.

PLACE OF THE PUBLIC HEALTH NURSE IN MATERNITY AND INFANCY WORK

By Miss Hulda Cox, Durham

In formulating a program of public health work in any community, ways and means must necessarily be devised for contact with the home.

Health organizations have long since recognized the value of the public health nurse in performing this major item of service and have therefore allotted the proper proportion of available funds of the health budget to the nursing service unit of the Dealth Department. It is not my purpose or intention to discuss the advisability or the inadvisability of the arrangement of the nursing program with respect to whether or not the nursing personnel should operate on the specialized or district plan for this is a matter to be determined by the health officer. I shall discuss, however, that portion of the nursing program which has to do with the problems of maternity and infancy work and some of the methods which I have adopted in promoting the service and obtaining the best end results.

The place of the Maternity and Infancy Nurse in the public health program, or probably I should say the place of the Public Health Nurse in maternity and infancy work is one which is not by any means easily filled. Her objective is a definite one with respect to the reduction of infant mortality, contact with the expectant mother and supervision of the practicing midwife. To accomplish these objectives the nurse must necessarily adopt a demeanor which will make her visit to the home a welcome one, her contact with the family physician a pleasant one, and her relations with the midwife command respect. To do these things requires patience and forethought. To fail to do them to a reasonable degree of perfection means confusion, dissatisfaction and ultimate failure in accomplishing the desired results.

The nurse's contact with the mother on the initial visit to the home should be planned with extreme care. First impressions many times are lasting impressions and it is therefore imperative that the nurse should exercise due care and judgment in beginning her attempt to rearrange the home routine with respect to the proper care of the infant. Many young mothers have learned the fundamental principles of infant hygiene from grandmothers and aunts who were presumed to be well versed in the use of asafetida, mole's feet and breast milk in the eyes of the newborn. These superstitious practices cannot be overcome in a day but on the other hand require patience and perseverance on the part of the nurse. Nefarious practices with respect to diet, depriving the infant of nature's own sunshine and fresh air, and failure on the part of parents to consult a physician when in need of such services, require considerable diplomatic dealing on the part of the nurse handling the case. These conditions can be and are being remedied every day in our State where a nursing service properly designed is in effect. Now, on the other hand, we meet with the young mother who is not illiterate but who, by reason of her lack of experience in infant care, and lack of the proper instruction and training on the part of her forbears, needs instruction and advice. Yes, of course, she has consulted the family physician frequently and is doing her best to follow his instruction, but she needs assistance. The nurse, has, in a case of this type, a golden opportunity to render a distinct service by showing her the way and thereby making motherhood a pleasure for her instead

of a burden and a thing to be feared. Nurses who have followed the maternity and infancy nursing program for long periods of time recognize the home conference service as the one important item not to overlook, for in this branch of the work the seeds are sown which are to be reaped in end results. Where baby clinics are conducted, it is through the home conference visit that the nurse is able to select her cases to visit the clinic centers in keeping with the fixed policies of the department in which she is employed. Through the home conference service she is able to assist the physician in seeing that his orders are effectively put into practice. Where a physician is in attendance and the case is scheduled for clinic service she is afforded the opportunity of following up the case to the end that the clinic physician has not labored in vain. And last but by no means least she can in many instances render a specific service to the prenatal case by making certain observations for the physician and reporting at periodic intervals the results of the laboratory examination of urine specimens.

It has been found in most communities that the practice of midwifery is tolerated and that a considerable per cent of the births, both white and colored, are attended by this type of practitioner. It has come to my attention in many instances that babies delivered by midwives are not frequently seen by a physician with the exception of where a critical illness is in evidence. In view of this fact clinic centers perform a humanitarian service because a means is provided whereby the nurse may have these babies observed at periodic intervals and a routine program of infant care established on the part of the mother which will increase the baby's chance of escaping the many pitfalls of infancy. The mere establishment of the clinic centers is only a beginning of the nurse's part in the success of the undertaking. She must necessarily know of the prospective clinic cases in the community adjacent to the center. She must see to it that mother and baby are present at the appointed time. She must be in position to follow the pre-clinic routine without loss of time in order that the clinic physician may conduct his examinations without undue delay. The record files should be at the designated place, the examining room should be equipped with scales, table and the necessary number of chairs. Waiting room for mothers and babies should be provided separate from the examining room if possible to do so as most physicians prefer this arrangement. These matters are purely incidental to a successful clinic center and are merely mentioned for the sake of showing the nurses part in the actual operation of this branch of the service. The real part the nurse is to play with these cases usually comes in connection with the home conference service, for it matters not how much instruction the mother has been given at the clinic center in regard to the proper care of the infant and the regulation of its diet, if this instruction is not put into effect little or no good will be accomplished. It is therefore imperative that the nurse should follow up the clinic service and for a while at least make periodic visits to the home.

Case finding is usually not a problem with the nurse for in most instances the Health Department in which she is employed has in effect an effective system of birth registration whereby the new cases may be obtained daily. The problem then resolves itself into one of conforming with the policies of the Department with respect to visits and return visits and clinic appointments. The nurse has an opportunity in connection with this part of the program to make inquiry in the communities where she visits as to whether or not prenatal cases exist or whether families have recently moved in from other counties with new babies whose births have been registered elsewhere. The finding of the prenatal cases is of course quite a bit more difficult than the infant case. This information is best obtained by working out a cooperative agreement with physicians and midwives whereby same will be reported in order that the nurse may make certain observations in the interest of the physician and to supervise those who expect to be attended by a midwife.

The midwife problem in most communities is one which is deserving of considerable attention both from the standpoint of the health officer and the field service nurses. This practice is and should be governed by drastic but not unreasonable legislation. The nurse must necessarily be acquainted with the legislation which governs this type of practitioner, for it is she who is usually expected to keep in touch with the individual midwife in the proper handling of her cases.

At this point I think something should be said about the training of the midwife and the nurse's part in this procedure. In my work as a maternity and infancy nurse I have found it highly desirable at periodic intervals to bring the midwives together for a definite course of instruction. The type of instruction which seems to be of the greatest value is that which is given to the midwife by demonstration rather than by lecture. The use of the doll manikin is frequently used with excellent results by way of demonstrating the procedure incident to delivery. The demonstration is made effective by the nurse first going through the routine procedure and then in turn requiring each individual midwife to perform the same routine under the scrutiny of the nurse in charge. The entire routine procedure of delivery and immediate care of the infant after birth may be easily demonstrated by the use of the manikin and done in such a manner as to make a lasting impression on the student midwife. Where the practice of midwifery is well regulated it appears feasible and advisable for each midwife to have in her possession uniform equipment and kept in the proper manner for instant use when called on a case. A bag of sufficient size constructed of heavy material, the opening of which is closed with a draw string, is practical and serviceable for carrying all equipment and supplies. Such a bag can be made for a very small cost and answers the purpose for which it is intended unusually well. The contents of the bag should consist of the following: 1. Hand brush to scrub hands. 2. Knife or pointed stick to clean nails. 3. Soap. 4. Good pair of scissors. 5. Lysol or bichloride of mercury. 6. Boric acid.

7. Several ampoules of silver nitrate. 8. Tape to tie cord. 9. Clean boiled dress and apron. 10. Six ounces castor oil. 11. Package of salts. 12. Six ounces of cascara.

In the course of instruction the nurse should be amply satisfied that the applicant for a license to practice midwifery not only has the required equipment and has sufficient knowledge and intelligence to use it properly but she should be aqually as well satisfied that the midwife has ample knowledge of the following: 1. When to refuse a case. 2. What medicinal preparations can she give, if any. 3. When she shall send for a physician during pregnancy. 4. When shall she send for a physician during labor. 5. When to send for the physician after labor. 6. When to send for the physician for the infant. Finally, when the nurse is satisfied that the applicant midwife has attained the required knowledge, she should be recommended to the health officer for a probationery permit to practice and after due time the regulation midwife license to be issued.

In the maternity and infancy program the nurse should not in any instance overlook the opportunity for the correction of defects and to encourage the giving of prophylactic treatment in the infant and preschool child. Nurses with more territory assigned than can be effectively covered quite often are prone to overlook this important item of service because of the major problems with which they are constantly confronted. This important item of service should be allotted a place in the program and given as much attention as time will permit. It is indeed unfortunate that up to the present time not as much nursing time has been allotted to the child between birth and six years as is given to the grammar school child. However it is pleasing to note the change which is rapidly taking place in most health organizations with respect to the nursing and preschool clinic service which is gaining ground and growing more popular year by year.

In conclusion I would like to emphasize one more point which is an effective weapon against ignorance, indifference and false propaganda. A limited amount of literature from authoritative sources is desirable to replace almanacs, patient medicine pamphlets and quack medical books. The average mother will be inclined to read something concerning the care of her offspring, so why not place in her hands a publication which teaches in a non-technical manner the fundamental principles of infant care? By so doing she may enlighten herself at spare moments and thereby assist the nurse in developing intelligent motherhood.

DISCUSSION

Dr. George Collins, (State Board of Health, Raleigh): This paper, I think lends itself very nicely to a discussion of a specialized versus a generalized program of nursing service. That is an old, old question, it is true; but it is one, I think, that can be very appropriately discussed in any meeting of this kind. The paper that has just been read I happen to know represents a department in which they have a very adequate and very

admirable specialized system of nursing service—the program in force in Durham County under Dr. Epperson. I should like at this time to bring out a very adequate program but one which is generalized rather than specialized, and I shall take the liberty of calling on Dr. Hege at this time to bring out this point in the program.

Dr J. Roy Hege, (Winston-Salem): Two years ago we adopted this generalized plan, after having tried the specialized plan for two years. I suppose the reason we did it was that we had quite a bunch of nurses in proportion to our population; we had seven nurses with somewhere about 40,000 people. In the county of Forsyth we have somewhere in the neighborhood of 900 births annually—somewhat over 100 or 125 births per nurse. The county is divided into districts. Each nurse has her district and does all of the various activities in that district. So she supervises the prenatal and infant care of the 125 children in her district. I think she can do that better in a rural community than any one nurse could look after the whole number in the county. She not only has the 125 infants, but she has about 500 pre-school children and about the same number of school children. The number of school children, perhaps, runs higher than that; we have about 6,000 or 6,500 school children in the county, which gives us in the neighborhood of 1,000 school children per nurse. This maternity and infancy work it seems to me is about half of the public health work. I am sure any nurse could put in half of her time in any community in doing maternity and infancy work perhaps to greater advantage than in doing school work; you are just doing the work before the child goes to school instead of waiting until that time. I think if we go on and do more maternity and infancy work and more pre-school work we shall require less school work.

The midwife control is interesting. We got really ambitious about that and put our midwives under a course of instruction and supervision. The board of health passed a regulation that no midwife should deliver a primipara. That went along right nicely until we had a widower who married a girl, and she had a baby. The man had not paid his previous doctor bill, and we could not get a doctor, and the health officer had to go out there and deliver her. So it was a hardship along that line.

In Forsyth County I am quite sure that the generalized plan of nursing is better than we could possibly have if we specialized. In fact, we thought that when we changed it, and we have never regretted it.

Dr. A. J. Crowell, (President State Board of Health, Charlotte): I should like to comment on this paper. I think the suggested outline in the paper as regards the work of the public health nurse is very fine. There is just one thing mentioned as regards the examination of urine and finding of albumin in the urine. Miss Cox did not (or at least I did not hear her) recommend that if the urine continues to contain albumin the patients be advised to call in a physician to look after the patient. Certainly she should let her know the importance of having the services of a physician in the delivery.

Another thing; Miss Cox spoke of demonstrating to these midwives manipulations on the manikin in teaching them how to take care of these cases of labor. Of course, there are some midwives who are capable of manipulating, but I believe it is a rather dangerous thing to advise them to do any manipulation at all. If the labor is prolonged I think that she should leave off the manipulation and call in a physician to take charge of the case.

Dr. J. Symington, (Carthage): I would go a step further. I think every midwife should be advised wherever possible to call in a physician. My brother is rather a specialist in this, and he maintains that there should be two physicians at every birth, besides a trained nurse. If the labor cases are going to be left to midwives we are not going to have great success in this line, so I think in every case possible the midwife should be advised to send for a physician.

Miss Cox, closing the discussion: Referring to the point of teaching the midwives, in our instruction it is always the nursing side that we take up, with a maternity and infancy nurse in charge. The nurse is careful in instructing the midwife what not to do and to be sure to call in a physician in any case of prolonged labor, headache, and things of that sort. The main idea is showing them how to prepare the patient as to cleanliness. They do not even know how to wash their hands and clean their nails and fix the patient properly. Most of their work is among their own class —the colored people. The main part is in finding that mother in our home visits and teaching her never to trust herself to a midwife. If the husband is present I always make it a point to talk to him and show him that he throws away enough in nine months to pay the doctor. Many times I have gone back and found that the husband has called a doctor. We try to teach the people never to trust themselves to these ignorant old negro midwives. There are some white midwives, of course, but in our county most of them are colored. What we try to teach the midwives is to clean their hands and prepare the patient, have a clean bed, etc., and it is in that teaching that we use the doll manikin.

DIPHTHERIA IMMUNIZATION

By C. A. Shore, M.D.
Director State Laboratory of Hygiene, Raleigh

No one doubts now the efficacy of immunization by toxin-antitoxin and other measures. Of course, no physician promises absolute immunity, but the people have gained the impression that it will confer absolute immunity, and if a child does unfortunately come down with diphtheria they are apt to blame the physician.

In all our discussions of immunization we come back to Dr. Park, and it is necessary to mention his name. A greater number of children have been injected in New York City under his direction than at any other point; he has kept very careful statistics; and he has had greater experi-

ence in the injection than anyone else. It was in his laboratory that the practice was introduced of injecting horses with small initial doses of antitoxin; it was found that they would produce much larger amounts of antitoxin than if started on the toxin alone. I think it was a German who first actually used it—Von Behre; but, as I have already stated, it has been used to a larger extent by Dr. Park than anyone else.

Questions are often asked as to the theoretical nature of the immunity which is produced by the antitoxin. The question is asked why such an artificial injection produces an immunity whereas an attack of diphtheria itself does not; at least, we all used to be taught that. I think, however, it is a mistaken presumption. We all know by experience and by the use of the Schick test that the percentage of immunity to diphtheria increases with age. In infants and young children it is almost one hundred per cent, and from that time it increases up to a certain age and in adult life we have almost 100 per cent immunity. I believe those persons who are immune have been infected with the diphtheria bacillus, either by an actual attack of the disease or by the presence of diphtheria bacilli in the throat not sufficient to produce the disease.

There are several preparations of diphtheria antitoxin used for the artificial immunization of persons. The one chiefly used in the United States, and so far as I know, altogether used in North Carolina is the toxin-antitoxin mixture. As at present prepared, there is present only a very small amount of free toxin. But there are other preparations in other countries. In France almost exclusively they use the anatoxin; that is, a toxin which has been detoxified by a moderate amount of heat and by the addition of formalin. In England they use a toxin which has been only partially detoxified by a lower degree of heat and by a small amount of formalin. It is called a toxoid. In the state of Minnesota and some other parts of this country a toxin is used which has been detoxified by the use of castor oil, as advocated by Dr. Larsen. Dr. Ramona attacks the antitoxin on two grounds; first, that it is a very difficult preparation, and, again, that accidents are likely to occur. Dr. Park tells me that he has prepared both and he sees not the slightest difference in the difficulty of preparation and that, like other biological preparations, an accident or an error is likely to be fatal but that there is no more difficulty in the preparation of anatoxin than in the preparation of the toxin-antitoxin. The other objection is that the continued use of toxin-antitoxin is likely to cause and will cause sensitization on the part of the person immunized. It would seem that this is very improbable, on account of the small amount of horse serum used in the preparation. It seems quite unlikely, also, because diphtheria antitoxin has been used in desensitizing persons subject to horse asthma. It may occur, however, but I know of no fatal results. Dr. Park says he has never known this to occur, but he is beginning to use a preparation of toxin-antitoxin made by preparing the antitoxin from the blood of goats instead of from the blood of horses. I had a letter from him a day or two ago, and he said if he definitely makes this

change it will be a change from expectancy only and not from any real danger. In our laboratory we have had some of the antitoxin made from the blood of goats and have distributed some of it. We have not made wide announcement because we do not know that we shall be able to supply it. We have advised some of the health officers but have not had a single special request for it. Whether it will be expedient to make a change I do not know. It has been claimed that the goat antitoxin does cause a larger local reaction; I do not know; enough statistics have not been collected to be of any value. But if it is advisable to use goat serum instead of horse serum it will be easy to make the change.

In an article in the Journal of the American Medical Association several months ago a case was reported in which the patient had received several previous doses of toxin-antitoxin, and the author assumed that the fatal result was due to the use of toxin-antitoxin. The use of horse serum in diphtheria antitoxin and tetanus antitoxin has now become so widespread that it is difficult to find a person who has not had an injection at some time during his or her life, and the tendency is to make such a person slightly more subject to reaction. I believe it is true that no fatal results have followed immunization with toxin-antitoxin. All the fatal cases have been following an initial dose in those persons subject to horse asthma and who were sensitized against the horse.

We know that three injections of one c.c. each of toxin-antitoxin will immunize something like 75 to 90 per cent, and we also know that five injections will immunize about 95 per cent. The question as to the number of doses is one which I can not settle; the health officer must settle the question as to the number of doses which he shall give. If he is prepared to make the Schick test about three months after the third injection, possibly that is the best method. But I do think that the parents should be carefully told that no absolute immunity is promised even by five doses and certainly not by three.

The preparation of the Schick test outfit involves such a minute quantity of toxin that it is very difficult to make. I believe that some of the men who make it at our laboratory have evolved a very excellent way of measuring this toxin, and our method has been copied in a number of laboratories. The National Canadian Laboratory sent a man down here to learn the method of measuring. I think you can be absolutely sure that that small amount of toxin which is sent out does contain the proper quantity of toxin. The difficulty is of getting it all into solution. There are other methods of preparing it; it can be prepared in a capillary tube; but they are all open to some slight objection.

In New York City they have recently evolved another test; that is, the estimation of susceptibility by observation of the reaction to the initial dose of toxin-antitoxin. I have had no experience, but I believe it is given inside the arm just above the elbow. At the sixth or seventh day it is observed. It is given subcutaneously, just beneath the skin, I understand being careful not to get into the deeper tissues. It is observed on the sixth

or seventh day, and if there is no reaction Dr. Park and his associates feel safe in assuming that the patient is already immunized. This method of testing can not be used for retesting a patient after the three injections have been given; I think the only method for testing immunity at that time is by the use of the Schick test.

DISCUSSION

Dr. A. C. Bulla, (Raleigh): When I was asked to discuss this paper I consented to do it because I knew at the time that when Dr. Shore was through there would be nothing else to be said, and I think that still holds true. However, I should like to say a few things about diphtheria immunization, the Schick test, and what we are doing to control diphtheria.

The other day I saw a report from the Detroit Health Department, 1928. It had recently checked 159,802 children under eleven years of age who had been given the toxin-antitoxin six months or more. Out of that number there had occurred 154 cases of diphtheria. This gave a rate of .96 per 1,000 population. It also checked 121,453 children of the same age group who had never had toxin-antitoxin and found that 1,183 cases of diphtheria had developed among that number of children, or a rate of 9.73. I think this is sufficient evidence that toxin-antitoxin is still good and that there is no doubt that it does render children immune.

In 1925, Dr. Kellog from one of the western states condemned the use of the Schick test for the following reasons: (1) protein sensitiveness (2) deterioration of material (3) poor technique and (4) interpretation of reaction. I will admit that these reasons are good ones, but on the other hand there are reasons just as good if not better why we should give the Schick test. To abandon it, I think, would be a step backwards. We are giving it and are going to continue to give it.

We are giving toxin-antitoxin to all children from eight months to six years of age without the Schick test. We also recommend that three to five doses be given to children under six years of age; after six years of age we recommend three doses. I suggest that the Schick test be used in children above this age.

I should like to defend Dr. Shore's Schick test material. We probably have felt that his material at times has not measured up to our expectations. That was my impression once, but I have found I was at fault and not Dr. Shore. You know these bottles have a rather large stopper and the quantity in the bottle is rather small. If you are not careful in removing that stopper, you are going to take all your toxin out, and when you put in the normal salt solution you are putting it into an empty bottle; there is no toxin in there to make the mixture, and you simply inject normal salt solution. I found when I was more careful in making my mixtures I got the number of positives that I would expect. So I think the fault is ours and not Dr. Shore's.

The other day I saw a report from Dr. Selwyn D. Collins of the United States Public Health Service who gave these most interesting

figures in regard to the maximum incidence of case age rate for communicable diseases: Diphtheria 3, measles 3½, whooping cough 4, chicken pox 4, and scarlet fever 5. The maximum death rate at specific ages for certain diseases are: Diphtheria 2 to 3, measles 1 to 2, whooping cough under 1, scarlet fever between 2 and 3. He admits there is a second rise in case rates about the age of 6, but that the greatest number of cases occur at the ages given and that the greatest number of deaths occur at the ages given. It is also interesting to note that about 88 per cent of children have measles before the age of 12, and about 90 per cent at the age of 22; whooping cough 75 per cent at the age of 12, and 77 per cent at the age of 22; chicken pox 50 per cent at the age of 12, and 52 per cent at the age of 22; scarlet fever 10 per cent at the age of 12; and 11½ per cent at the age of 22; diphtheria 8½ per cent at the age of 12, and 10 per cent at the age of 22. I do not think that the figures for diphtheria will hold true in North Carolina, neither will those for scarlet fever. We have more diphtheria in North Carolina than we have recognized.

Dr. F. R. Harris, (Henderson): I should like to ask one question of Dr. Shore. If the injection of toxin-antitoxin does not produce total immunity, does it lessen the severity of the attack?

Dr. J. H. Hamilton, (Wilmington): I am sure all of us have heard before today and I am sure we have heard today that it is important to give toxin-antitoxin to children under five years of age. I know I have heard that statement a great number of times, but a great many of us need to be told the same thing a great number of times before we realize it. I happened to hear a paper by Dr. Hayne, State Health Officer of South Carolina, in which he analyzed one hundred deaths from diphtheria in the state of South Carolina. In that paper he conveyed the very definite idea that about 85 per cent of all deaths from diphtheria are in children under five years of age. It brought the thought to my mind that we should direct more and more of our attention towards immunizing the child under five years of age.

Dr. Shore, closing the discussion: I have no statistics on the question asked by Dr. Harris, and I have not seen any published discussion of it, but I think it would be reasonable to expect that it could have a modifying effect provided an attack of diphtheria does occur. In other words, you could give partial immunization, not enough to entirely prevent the disease but enough to modify it. I think we ought always to remember that immunization is always a relative term; it is probable we never absolutely immunize anyone. We might think we do so, but probably in those cases an overpowering dose of bacteria would still produce the disease. That is certainly true in most diseases.

President Hudson announced that the privileges of the floor would be extended to the visitors present, Dr. John T. Burrus, former president of the State Medical Society; Dr. Wilburt C. Davison, Dean Duke University Medical School; Dr. Hart, of Duke University; Dr. W. F. Walker, of the American Public Health Association, and others.

WHAT CAN OUTSIDE AGENCIES DO IN COOPERATING WITH HEALTH DEPARTMENTS?

By R. L. Carlton, M.D., Winston-Salem

In the beginning allow me to say the speaker did not select this subject. Before I am through I suspect you will agree with that statement.

If this subject had been "What should be the relations between voluntary and official health agencies?" the discussion might have been clearer from the onset—but since the very broad question as to what "outside agencies" can do in cooperating with health departments is asked there is a field of almost unlimited possibilities.

Outside agencies is interpreted to include all private or voluntary health organizations, any other organizations which might directly or indirectly have any influence on the health situation, any person or parent or any group of persons interested or who ought to be interested in health and any other official agency not having directly to do with health but which nevertheless is interested and has an indirect influence—such, for example, as departments of agriculture, home economics, schools, etc. "Health Department" is understood to refer solely to the official governmental agency.

Personal Health is not entirely an individual matter. There must be group action on the part of the citizens of the community or the health of individuals will suffer in spite of unusual personal care.

The individual, for instance, cannot control the quality of the milk supplied to him. The community as a whole must prescribe and enforce laws requiring the sanitary production and handling of milk or the individual consumer is helpless and must take what is available.

The individual cannot personally control the quality of the water supplied to him. He may think he can and may provide his own well or spring but even then he does not have a water supply of unquestioned purity.

Usually he must accept the water that comes from the faucet. So it is community action as a whole that safeguards the public water supply.

The individual cannot personally control the action of his neighbors who are ill with communicable disease. Again, community action is necessary to enforce protection. The control of the individual's environment is a governmental function.

Because of these and other obligations which a community owes to its individual members governmental health activities have been inaugurated.

It will be remembered that health departments were first organized to suppress epidemics; and as knowledge of disease became more definite their efforts were directed to the prevention of other diseases which were not communicable.

As public health work advanced the old-time epidemic disappeared—typhoid fever is a vanishing disease; yellow fever is almost extinct;

malaria and hookworm are being controlled; so are smallpox, diphtheria, rabies and other diseases. It will be remembered that in the fight against communicable diseases official health departments employ means which cannot be used by other agencies as, for example, police power. It is therefore no longer a source of wonder that health departments have been provided, that their activities have been increased and extended from time to time, that as medical science has advanced new methods for fighting disease and promoting health have developed and it is found that not only have epidemics largely disappeared, but that general death rates have been reduced, progress has been made in prolonging life and in reducing a number of specific death rates. Better economic conditions, better medical treatment, the entrance of many new agencies into the health field, have, along with health departments shared in this great work.

All this does not mean, however, that health departments wherever established have developed into a state of perfection nor that every needy community is well on the way of providing such an organization. There are yet many places where organized official health work is badly needed; there are still other communities where health departments are not as energetic as they should be; and many departments that do not have the equipment they sorely need. Many outside or unofficial agencies have come to the aid of such health departments.

Public health in the 20th century is characterized by the development of unofficial agencies to combat specific diseases or to promote personal health. In many instances these agencies have been of great assistance by stirring public sentiment to demand new and better standards of health. This has been done while working closely with the official health agencies —by hearty cooperation with them. Almost invariably the voluntary agency has conceived its function to be one of *investigation,* the *inauguration* of a new activity, the *demonstration* of its usefulness, *transferring* the activity to the health department or discontinuing it.

For example, let us consider *tuberculosis work* since this is one of the best known of the outside agencies. No community is having too much anti-tuberculosis work carried on in it, and with this disease occupying so high a place among the principal causes of death every health department readily welcomes additional activities which tend toward the prevention of the disease. A *survey* to determine how many cases of tuberculosis are in the community is undertaken. This *investigation* is made with the knowledge and assistance of the health department. Every health officer is familiar with the method of making such studies. A worker consults various records and visits hospitals and physicians and possibly many homes in the community—the result usually being that there are found to be far more cases of tuberculosis in the community than is suspected by doctors or health officer. Perhaps it is then suggested by the tuberculosis organization that the health department establish a clinic, or dispensary, or that a special hospital be provided for tuberculosis, or that one or more field nurses be provided to do tuberculosis work. Whichever

of these activities is agreed upon is recommended to the local board of health or appropriating body for that city or county usually to be told that there are no available funds and the activity cannot be provided. Then perhaps the tuberculosis organization establishes a clinic for the diagnosis of tuberculosis and the supervision of tuberculous persons, the details of its organization and conduct being worked out with the knowledge and advice of the health officer and is maintained for several years.

In one North Carolina city just that kind of program has been going on. A clinic was established; a nurse who did only tuberculosis work was provided; an extension of health work with babies through baby health stations was made possible; a specially trained health teacher in the schools was provided; a campaign of education regarding tuberculosis was carried on through newspapers, bulletins and leaflets mailed and distributed, by posters in schools and industrial plants, by talks to civic clubs, women's clubs, church societies and others, by a wide distribution of tuberculosis Christmas seals and by other means. All these activities were first made possible by the voluntary agency whose every effort was dovetailed with the program of the health department. The result has been viz: the health department has taken over the clinic; all the baby health station work has been transferred to the official department; the school authorities have been convinced of the wisdom of good health teaching and now all teachers are teaching health regularly without special supervision; two nurses are still employed by the volunteer agency and one of these will no doubt be transferred to the health department during this year; the educational end of this particular piece of work was sufficiently effective to cause the citizens of that community to vote a bond issue of one quarter of a million dollars for a tuberculosis hospital which is now being constructed. The activities carried on and the results accomplished, in the city mentioned, by the cooperative efforts of outside agency and health department have been repeated many times over throughout this country.

Here is the point of value, I think: Health departments cannot get proper support until public opinion is educated and this is where the volunteer organization, the "outside agency" if you will, comes in. Such an organization can make possible the carrying on of certain demonstrations of work; and when those demonstrations have been made so clearly that all the world can see public opinion will be educated to the point where it will give health departments the necessary support.

In this matter of education it may be suggested that health departments should take the lead in educating their communities. This contention is worthy and we hasten to remind that this has always been one of their most important duties. A powerful influence has been wielded by health departments through bulletins, posters, lectures, newspaper articles and other means; and it may be remarked in passing that sometimes these local efforts may accomplish more than more elaborate material from a distant source. Still, there are extremely few health departments with

sufficient funds in their budgets for publicity and education to allow adequate programs to be carried on—therefore we must turn to outside agencies for help.

In the health department which the speaker represents we draw very freely upon the literature of several large insurance companies, several of the national volunteer health agencies, a number of industrial companies, the great foundations and other sources. The educational resources of these great agencies are largely ours for the asking—health departments would be derelict in their duty did they not use these helps.

There are still other means of strengthening health departments than the demonstration and establishment of new activities and the proper education of public opinion. May I enumerate some of them?

An outside agency interested in child welfare may come into the community and, with the knowledge and consent of the health officer, carry on a *birth registration campaign,* thereby assisting health departments in improving their human bookkeeping. We all admit that this is of prime importance for how are we to know why babies are lost unless we know how many are lost as a starting point in baby welfare work.

The study, report and distribution of *infant mortality statistics* as made by one of the child health organizations is a national challenge to every health department for better work. It is obvious that studies of this kind could be made only by some central, outside agency.

One volunteer organization has paid some attention to the *midwife situation* which has, from time immemorial, been a bugbear of contention, especially in southern communities. It has been studied and surveyed with the result that programs of control and supervision have been worked out and are actually in use, accomplishing splendid results in more than one North Carolina county.

One of the national volunteer organizations has helped to discover whereby *health education* can be made a part of general education and to stimulate public appreciation and understanding of health education. It has done this by *research* and *demonstration,* by *scholarships* to encourage specialized training, by promoting facilities to train teachers in health education, by advisory service and publications.

Just a word about *additional training for health workers* and teachers. An important means of assisting and cooperating with health departments is in the provision of scholarships for health officers and for teachers of health. This has been done for a number of health workers in North Carolina with the unquestioned result that interest in health education has been increased, administrative procedures of health departments have been improved and the positions of official agencies as leaders in health movements have been strengthened.

Outside agencies have helped to inaugurate several community *Child Health Demonstrations* which had for their object the awakening of communities to their responsibility toward the health of children and to work out effective, practical programs.

Perhaps these demonstrations have not been in your community nor in mine but nevertheless our health departments have been benefited by them because we have had free access to a knowledge of their methods used and results achieved. If we have not profited by the use of this material the fault is with our own department, not with the voluntary agency.

The "Survey of 86 Cities," conducted by a voluntary agency has been of valuable assistance in that out of it has grown the appraisal form which serves to score and grade in comparable terms public health activities.

A voluntary agency is now inquiring into health teaching and health results in the schools of the country. This *School Health Study* has for its object to find out: By what visible aspects can health in children be determined? To what extent is health related to certain school health activities? How can schools measure the progress of health work? What kind of school activities give results in healthy children? This study has been going on for some 2 or 3 years. Hundreds of children in many schools in different sections of the country have been tested by experts. Health activities, health instruction, home and community conditions are being studied and general school curricula are being sampled and measured. This study is trying to discover whether some of the things the schools are doing are worth doing. To find out how education can be made healthy and how health can be made educational is the aim of this study. When the relationship between what is done in the school to promote health and what results from it is revealed it will lead to the reconstruction of school health programs on a much more efficient basis. Which one of our official health agencies or departments of health could hope to undertake such a study? Yet what department is there which will hesitate to make use of the results of such a survey and thereby benefit both department and community?

May I mention *May Day?* With the nation-wide publicity for child health carried on by the American Child Health Association in cooperation with official agencies health is made contagious in the minds of children and public opinion is stimulated and encouraged to provide a year round health program. No health department can afford to ignore the splendid opportunity that has been opened up by this voluntary organization to inaugurate a worthwhile health movement on May Day, capitalizing the health publicity thus secured to the good and lasting advantage of the community. The value of the May Day program which is purely a cooperative one cannot be questioned.

May I mention in this connection a bit of cooperation between the health department and two daily newspapers in my city? On May Day for two years—this year will make three—these papers have issued a special child health magazine section. All the material in this section is health material supplied by the local health department. Besides regular editions several thousand copies of the magazine section are given the

department for distribution. No cost is attached. This is an opportunity not to be overlooked of placing in the hands of many parents health educational material.

The speaker wishes just here to pay tribute to the newspapers of his city for another bit of assistance which they have been rendering the babies of the community through the health department. These papers have for a number of years freely allowed the use of their columns for health educational material, being particularly interested in all matters pertaining to babies, and they have in addition annually conducted a campaign for the raising of funds to provide milk and ice for needy babies and children. The need for such a fund was discovered through work of the baby health stations. The sum raised each year has grown from a few hundred to more than two thousand dollars last year. This is turned over to the health department with no restrictions to be distributed by nurses and baby health stations. Such work is greatly appreciated and often can only be carried on successfully by an outside agency working with the health department.

There are many other outside agencies which can be of decided and lasting help to health departments if their interest be properly enlisted. The length of this paper will not allow a discussion of such agencies but it would be too incomplete to leave off at least mention of some of them.

The *Parent-Teacher Associations* with their campaigns to send to school children 100 per cent free from remediable defects are bringing together at the best time the child, parent, teacher and doctor. Every health department can use such efforts to advantage.

The National Safety Council should have a place in every community health organization. The prevention of accidents has become a serious concern and the Council is prepared to work with schools and other agencies to develop an educational program.

No health department can hope to do the work it should do without the help of public health nurses—which brings us to think immediately of the *National Organization for Public Health Nursing,* which is always interested in promoting better public health nursing. In this connection health departments should make use not only of the public health nurses in the community but also of the services of private duty, institutional and even student nurses who are practically always willing to assist at clinics, in various surveys and in other ways share in the health program.

The Society for the Prevention of Blindness is rendering valuable service in the conservation of vision of school children. It has for distribution most interesting and valuable literature and has available expert personnel for demonstrating various procedures—especially important and appropriate of which at this time is the testing of the eyes of pre-school children.

All over the country parents and professional workers are forming themselves into groups for child study—trying to arrive at the best methods of feeding and caring for children and protecting them from

disease. Many of these groups form what is known as *Nursery Schools* the work of which is important from a health standpoint. Here for the first time it is possible to watch the continuous development of children. Activity, eating and sleeping habits are under control. The physician along with social worker and psychologist has a part in this. Wherever there are nursery schools health departments should deem it a privilege to work closely with them.

Young Men's Christian Association, the Young Women's Christian Association, the Boy Scouts of America, the Playground and Recreation Association of America and many other organizations have health programs as a part of their aims and ideals, and the services of such groups can always be enlisted in some phase of the community health program if proper contact is made.

Many *great industrial concerns* and likewise many of the *leading life insurance companies* are doing much to foster better health and better living and practically all of them are both willing and anxious to cooperate with health departments. No agency takes a more positive stand for periodic health examinations than does the health department yet life insurance companies have probably done more real work toward popularizing that activity than have official agencies. Their health literature, films, exhibits, popularization of public health service, cooperation in campaigns for clean up, street safety, recreation and child welfare are all of great value and can be freely used by any health department. Only a few days ago one of these great life insurance companies sent the department with which the speaker is connected several thousand copies of a leaflet on "colds" and a great quantity of another booklet on "Early discovery, early recovery." These will be distributed to groups of negroes during "Negro Health Week." Another instance of their cooperation is in the carrying on of special campaigns. The field staff of agents and managers have been taught to be messengers of health and stand ready at all times to assist local health departments in promoting campaigns against tuberculosis, diphtheria, typhoid, malaria, etc. They gladly distribute health department literature, they help arrange for public health meetings, they cooperate better than most groups in having their own families protected against various diseases and so on. Again, when efforts are being made to provide certain sanatoria or hospitals by bond issue or when there are proposed appropriations for health departments, etc., the insurance companies and their agents invariably lend their influence for the advancement of the health measure.

There is another group whose activities should be influenced by the health department and which in turn can be of immense assistance—reference is made to the civic clubs—Lions, Civitan, Kiwanis, Rotary, American Legion, and others. If these clubs should do nothing more than permit the health officer to come before them occasionally with a message pertaining to some phase of health it would be worth while for their membership is made up of the outstanding citizens of the community and

their activities can be used to splendid advantage. But if there is real leadership in the health department the civic clubs will do more than merely listen to a health talk. If a clinic for crippled children is needed the Kiwanians provide it; if there are underprivileged boys who need guidance the Rotarians will look after them; if the clubs are shown the need for a tuberculosis hospital they all get behind it and the hospital is provided; if an extra boost is needed for the milk fund or for the sale of tuberculosis Christmas seals or for support of some health activity of the Community Chest, first sell the idea to the civic clubs and success is practically assured. In efforts to educate public sentiment to the proper support of health programs in the community health departments cannot afford to ignore the value of the civic clubs and their cooperation.

So, the conclusion is reached that several agencies—social, civic, industrial and health whether official or voluntary have an influence on the general health and welfare of the community. We also arrive at the conclusion that a health department needs the help of all these agencies and that if the department is lucky and has the right leadership it will get their cooperation. There are many ways in which this assistance may be manifested—and whether as surveys, demonstrations, research, assistance in various campaigns, education of the citizenship or what not the various activities should be properly directed and coordinated—remembering that after all the aim of all true health departments is to render service and the great majority of misunderstandings in this world are not misunderstandings at all, but simply a lack of understanding which is very different.

DISCUSSION

Dr. E. E. Ford, (New Bern): In the presence of all these distinguished gentlemen whom the president has mentioned, representing organizations that cooperate in public health work, I have very little to say.

Our public health work depends entirely upon outside agencies. The first thing they do is to give us the money. Then if those who give us the money would leave us alone for a while and watch the results that would give us a better chance to show what public health work can do. Outside organizations are the ones that influence boards of county commissioners and boards of aldermen to appropriate the money.

Dr. Carlton only partially covered the question. If he had had more time he could have gone further and further. What I should like to see is a dictionary or perhaps an encyclopedia listing all those organizations that want to assist and are shouting for a chance to assist in the public health work. With a list of all of those and a list of the personnel and what they can do, each one of us could pick out the individual program and adapt it to his individual work. One difficulty is that there are so many organizations that we do not know how to use them. Some of those not mentioned will give us for the asking or send us large quantities of stuff without asking; the makers of Klim and all the various baby foods,

of mercurochrome, even getting down to cigarettes, will send us large quantities of stuff to use in public health work.

As to our local organizations, parent-teacher associations, women's clubs, Kiwanis clubs, Rotary clubs, etc., how can we use these and adapt them to our own program? And, of course, the newspapers. What we want to do is to use them, but we do not want to get them in and have them start running the work so it goes at an angle we can not control but get them in and steer the work so that it will assist the local program. Every organization—the Shrine, the Kiwanis club, the Elks—has its leaders, its men who are interested, its men who actually do something. Any work that is done is always done, of course, in the name of the organization, but you will find that of the men appointed on committees it is always one or two that do the actual work. They do not always want the publicity, of course, but if you have any piece of work you want to do locally the thing to do is to pick out one or two men and the rest will follow. The work will be done in the name of the organization; perhaps the man appointed at the head of the committee may get some glory; but one or two on the back seats will be doing the whole thing. The thing you want to do is to find the man who is interested and help him steer the thing. Then whoever gets the glory makes no difference; the work is done. There are so many of these organizations working all over the United States that it is difficult to pick, and sometimes it is difficult to avoid.

Dr. W. F. Walker, (American Public Health Association, New York City): Being one of the outsiders, I feel that I can talk to this question in a way that Dr. Carlton possibly had a little hesitancy in doing. The American Public Health Association is very much interested in supporting and promoting the activities of the official health agencies over the country. We have for the last several years been working very closely with a number of national lay organizations which are not primarily interested in public health in trying to develop their interest and their technic of work so that it will fit in with the local health officer's program. It is our conception, and we are trying to write this into the program of all these organizations, that the leadership ought to be in the health department. That leadership can be discussed later. The three items we try to put in are (1) study of health conditions in the local community; (2) preparation of a program to meet those conditions, which has been well thought out with the official local agency and probably the state department of health; and (3) that the general direction of it shall be, at least under cover, in the hands of the health officer. This matter of who takes the glory is an important consideration, and it wants to be approached rather subtly; but the health officer, as a rule, does not care about the glory so long as he gets the job done, and that is as it should be.

Two organizations are interested in this work all over this country. They are the General Federation of Women's Clubs, which for the last three years has had a very definite and concrete program, and, secondly, chambers of commerce, under the leadership of the Chamber of Commerce

of the United States, which is undertaking now a health program which you will find of immense value to you. It is to be guided in part by the American Public Health Association and will have these three elements: First, study of conditions; second, formation of a definite program; and, third, leadership under the official agency.

Dr. Chas. O'H. Laughinghouse, (State Health Officer, Raleigh): Under this particular heading it gives me a great deal of pleasure to announce something which is probably familiar to all of you, but lest it be not familiar to everybody I want to state that the North Carolina Federation of Women's Clubs got the first prize in 1928 for doing the best health study in the United States as done by a state federation of women's clubs. The prize, as awarded them, was the privilege of a survey of some county, decided upon by themselves, in the state of North Carolina; and Dr. Walker was given the responsibility of making that survey. The survey itself, to my mind, is a most superb thing; and I am undertaking to get from Dr. Walker a sufficient number of copies of this survey to put it in the hands of every county health department in the state for its careful study and analysis.

But the real thing that prompted me to say something about the work of the women's clubs was to make a motion that the North Carolina Public Health Association express its thanks to the North Carolina Federation of Women's Clubs for the splendid work they did last year and for acquiring a prize which is considered about the most coveted prize which any federation of women's clubs can acquire.

This motion was seconded and was carried unanimously. President Hudson requested the Secretary to write to the Secretary of the North Carolina Federation of Women's Club to express the appreciation of the North Carolina Public Health Association and to advise the Federation of this vote of thanks.

THE NEWER TRENDS OF HEALTH EDUCATION IN THE PUBLIC SCHOOLS

By Reba F. Harris

Associate Professor of Hygiene, N. C. C. W., Greensboro

The medical profession discovered some ten or more years ago that the parents, the schools, the communities, and even members of its own profession were neglecting the health of the nation's children. Through medical examinations of the school children a startling discovery was made that many remediable physical defects were retarding the growth and mental development of thousands of these children. A challenge was sounded far and wide to solve the problem of giving the child greater opportunities to make his way in life unhampered by physical health defects. In answer to this call, public health nurses, physicians, and health

organizations seemed to spring into existence as if by magic; and with the spirit of all pioneers, they fought through bitter obstinancy, ignorance and disbelief.

In the beginning the major emphasis in the solution of this stupendous problem was the finding and removing of the remediable physical defects, but the work had not progressed very far until the workers with a vision began to see that this was not sufficient unto itself; that in addition the child must be taught to form desirable health habits which might aid in the prevention of certain health defects and build up the body's resistance to disease. So the practice of simple health rules was made into a game and there appeared that delightful device of the Modern Health Crusade with its attendant songs, rhymes, stories, plays and posters and an avalanche of pins, buttons, medals, and blue ribbons as incentives or rewards for healthful living. Children were paraded on the streets and at county, State and local fairs, carrying health posters and slogans. Parents and the community were invited to health plays and clowns and jesters were added to the role of entertainers to make health teaching attractive. All methods used were of a spectacular nature—they had to be in order to disturb the complacency of children, parents, school communities, and even members of the medical profession who had been neglecting this phase of daily living we call health.

In the midst of these many games and devices to make health habits attractive to children, the public health nurses, the health officers and the health organizations discovered the part of the class room teacher and the school administrators in directing the health training of children. "The classroom teacher holds the key to the situation, and the training of children in the ways of healthful living is the responsibility of the public schools" was echoed throughout the nation. Into the normal schools, colleges and universities went the fearless health workers to ask that the new teachers be given training in methods of teaching health to children. So the health games, the rhymes, the stories and the jingles were added to the equipment of the new teacher as well as the teacher already in service.

SOME OF THE OUTSTANDING RESULTS

Now that a decade has passed public health workers should stop and survey their handiwork. To what significant results may we point, and what are some of the outcomes?

Without quoting exact statistical figures we may point to a great increase in the number of public health nurses, public health officials, other health workers, county health units, voluntary health organizations and a growing interest on the part of the practicing physician and the medical profession as a whole. This great expansion in personnel and the changed attitude of the physicians have been due largely to the development of activities centered around the health of the school age child, although within this time much of the public health work has been extended to the pre-school child and to adult health. Within this period of

development millions of school children have been examined, and many thousands of remediable physical defects corrected. It is doubtful if one could find a very large number of the nation's school population who are not familiar with the tongue-depressor, the stethiscope, the eye charts and the scales. Today in almost every school there are health posters, results of health contests, and many other evidences of children's practicing the health rules.

Courses in Health Education have been added in the normal schools, colleges and universities for the training of the prospective teacher and the teacher in service. While we can not say that these courses are meeting the present needs and that all teachers are receiving the training, we may, nevertheless, point to growth in this phase of the work.

Perhaps one of the most significant results of the school health program —together with all other phases of public health work, is the changed attitude of the parents and the communities in regard to the health needs of the school child. In the beginning public health nurses spent much time in an effort to persuade the mothers to bring their children to the clinics or to have the discovered physical defects corrected. Now we can enumerate communities where the parents are demanding that the health officials establish clinical services, and where more parents are taking their children to the physician upon the receipt of the first notice from the health officer of any physical defects. Today through the nation-wide program of the Summer Round-up, sponsored by the parent-teacher organizations, "getting the child ready for school" means more than buying books and pencils and making new clothes. In addition it means, is the child physically fit to enter school? Throughout the nation we find scores of health examinations and the correction of physical defects of the pre-school child as well as the school age group. Many homes have accepted the health teachings of the schools, and as a result many home practices are now conforming to better and more healthful ways of living.

Another basic result of this school health program which was started by the public health workers, is, that the schools are fast accepting the responsibility for the health instruction of its pupils, for today almost every school system has some form of health teaching. The State Departments of Education are adding State Supervisors of Health and Physical Education and are enacting laws requiring the teaching of these subjects in all schools. At present there are 21 states having such supervisors, eleven of which are Southern states. Every State has some health education law, or requirement for health education in its State Course of Study. It is interesting to note that at least three-fourths of these early state courses of study were written or planned by the public health workers. City and county systems also are adding supervisors of health education.

It should be of particular interest to the public health workers of North Carolina to know that our own state educational system has made recently a very forward step in accepting the responsibility for health education in the public schools. In January of this year the Department

of Supervision of the State Department of Education called together all of the county supervisors of schools in a series of three meetings in different parts of the State to discuss ways and means of promoting the growth and development of the rural school child. These conferences covered three main points—the present program of health education in the schools of each county represented; the evaluation of the instructional phase of this program in terms of sound educational practices; and steps for future plans of procedure. The most significant outcome of these meetings was that the supervisors and the State's Department of Education agreed to place special emphasis on the health of the school child for the next five years in an effort to make a state-wide study and analysis of existing conditions and needs, and to evolve methods for effective health teaching as an integral part of the public school system.

SOME OF THE NEWER TRENDS IN SCHOOL HEALTH EDUCATION

Now that the educators are fast accepting the responsibility for the health training of its children it should be of interest to all public health workers to know just how these educators are coping with this very important phase of education. Are they continuing to use the old spectacular methods started by the health workers or are they finding new ways for inculcating health habits, impressing health knowledge, and building desirable health attitudes?

In most school systems the work is largely in a transition period but we may point to at least two outstanding trends toward which the program is developing. The stories, songs, rhymes, dramatic and health crusades are gradually fading away as relics of the past, for it has been found that while these devices have served a very valuable purpose, they no longer fit into the more progressive scheme of education. Second: health education procedures are being adapted to the newer and progressive methods of education. It is the aim of this type of education that a healthy child shall be a by-product or an outcome of education; that the ways of healthful living shall be gained through educational practices.

That we may more clearly understand some of the newer trends of health education let us enumerate a few of the basic practices of progressive education:

1. Progressive education is focusing its attention on the child—not text books, grades and subject matter as such. We are now speaking of the "child centered school."

2. Progressive education is not so concerned with what a child must do to be normal, but is striving to find out what he can do comfortably and well with his native ability and the environment in which he is found.

3. Progressive education is considering the child as a unit, with mental, emotional, social and physical life inter-related—not just mental training as was once thought to be the function of the school.

4. Progressive education is gaining the knowledge through its study of children that a child unfolds and develops in all of his capacities

according to basic scientific laws—that there are specific stages in this process of unfolding just as in the growth of plants and trees; that this unfolding is influenced—either retarded or promoted—by the environmental forces and factors which surround him. In the light of this knowledge, progressive education is providing opportunities, and utilizing natural situations in which the child's capacites may best unfold. He is given more freedom to develop naturally.

5. Progressive education is concerned with the scientific study of pupil development—what are the contributing causes for the lack of best unfolding? What factors are causing the child's mental, emotional, social and physical retardation? For such scientific studies a battery of tests are being used that all phases of child life may be studied. Included in this battery of tests are intelligence tests; educational tests in all subjects; tests on habits of study and work; tests on teacher-pupil relationships; motor ability tests; results of physical and medical examinations; school-home-community relationships; and teacher opinion. A combination of the finding of all these tests make for a more complete analysis of study of the needs of the individual child.

6. Progressive education is then adapting its program to the individual needs of the child as revealed by the complete analysis made. It is providing opportunities and utilizing situations for big unit teaching. Interest is the motive of all work.

7. Progressive education has a closer unity and understanding with the home and the community to meet the needs of child life. Parents and the community are visiting and taking an interest in the school, and teachers are visiting in the homes and taking an active part in the community life as never before.

It can not be said that one will find all of these practices in any one school, nor that all of the newer phases of education have been stated, but certainly the practices given are some of the trends in the most progressive schools of today. In view of these methods and practices of education one can see the path of health education as it takes its rightful place in the broader educational scheme. Through this program the school is not content to find the physical defects and train the child in the formation of physical health habits. In addition to this it is building desirable health attitudes, and impressing scientific health knowledge. It is developing the mental, emotional and social health of the child as well as the physical. That all phases of healthful living may function not only in child life, but through adult life the school is providing opportunities for the practice of healthful living throughout all natural situations of the school day and is making an effort to extend these practices into the home and the community. The school environment is being improved, and the necessary equipment added.

THE PLACE OF PUBLIC HEALTH WORKERS IN THIS NEWER SCHOOL HEALTH PROGRAM

With a knowledge of the basic educational principles and the trends of the school health program as it is being developed by the educators all public health workers who come in contact with the public schools should stop to ask the questions, "What is the place of the public health nurse, the public health officials and the health organizations in this newer scheme of health education?" "While all schools have not yet reached the goals set, nor accepted fully the responsibility for the health training of the child, shall the old methods used in the early beginning be continued?" A satisfactory answer to fit all situations can not be given to these questions. Certainly there is still a very vital part in this program for all trained public health workers. While the educators are making a conscious effort to solve the problem which you have been able to make them see, they do not wish to assume the duties for which your training and experience especially fit you, and for which they have not been trained. Having been connected for several years with the field of public health, and later with the education system, may the speaker point out or suggest the part which members of the public health profession may best take in the newer school health education program:

1. Public health officials and nurses should remain advisers to the teachers and school administrators in matters of child health. To do this effectively, and to meet the needs of the schools there should be a better understanding of the basic methods and practices of education. The public schools of today are rapidly changing to meet the demands of the developing world.

2. Public health physicians and nurses should remain the technical experts in medical examination and diagnosis. While the teacher may, with proper training, find the gross visible defects, she can not take the place of the trained physician and nurse. The teacher should, however, be able to interpret the findings from the medical records; for this she needs special training.

3. Public health physicians and nurses should make more accurate diagnosis and keep better records of the examinations if the teacher is to use the findings in her scientific study of the child and his needs. In order to make more accurate diagnosis there must be more time devoted to the examinations and to the compilation of readable records.

4. Public health representatives must provide opportunities for the corrections of the defects discovered. We have had too many examinations and not enough corrections. Too often the goal seems to be great numbers of examinations to include in the monthly report or newspaper publicity. The speaker does not wish to infer that public health departments should actually make the corrections, but that they are in the position to work more closely with the practicing physicians and the home, and should

devise opportunities which are economically and educationally sound for all parties concerned.

5. When working with the children in the school public health workers should make their methods of work educationally sound and more scientifically accurate. In as far as possible your program should be adjusted to that of the school. The class room teacher should be given a medal for her patience in allowing her program of school work to be interrupted at any and all times by the public health workers. Now that the teacher is working more and more with scientific tests it often means that a whole day's work—or perhaps a year's work—is ruined by having an interruption in the midst of this testing program. The so-called "health talks" given by nurses or health officers to the children in the classroom are too often a waste of time for all concerned. Perhaps the teacher has already given the children this information in a very much more natural situation and on an age-grade-level of the child. Such information which public health workers wish to convey to the children should, in most cases, be given to the teacher who in turn would interpret it to the child in a language which he understands.

6. Public health representatives should know more about the basic laws of child growth and development, that they may see the child not only physically, but also mentally, emotionally, and socially.

7. And finally, although not last in importance, the public health representatives should be the vital connecting link between the school and the home and between the home and the practicing physician.

The school health program in its newer trends seems to throw out a challenge to all public health workers. Here is a work which was born of your wisdom—your vision, your desire for greater service to humanity through the little child. A work which has stirred the whole world—and work in which there is much yet to be done—will you grow with it that you may continue to serve as its counselor and adviser?

DISCUSSION

Dr. L. B. McBrayer, (Managing Director, North Carolina Tuberculosis Association, Southern Pines): Sometimes it is just as important to know when not to talk as to know when to talk; and I think at this time we shall probably be better off if we just think over what this intelligent, highly up-to-date educator has brought us, so I shall ask you to excuse me; and I shall have something to say this afternoon.

HOW TO SELL PUBLIC HEALTH

By Dr. L. Jack Smith, Health Officer, Wilson

To the slogan, "Public Health is Purchasable," may be added another slogan, "Public Health is Salable." The burden of this paper, therefore, will be to show WHY and HOW to sell public health.

St. Elmo Lewis, a nationally known advertising expert, is author of the following statement: "It is a fallacy that the public knows what it wants. It has to be taught its desires and needs, except the most elementary ones." If this be true, and I think it is, then it is our job to create the right desires and point out the needs of our people in matters of health. To prove that we must be diligent in the matter of creating desires and showing needs, again listen to the same author: "It is a fallacy that the public will demand over any great length of time what it is not constantly reminded of." Again we quote from this author: "It is a fallacy that the public will automatically reward enterprise and service. The public must be TOLD and SOLD before it will extend rewards." To say then if we as health workers "deliver the goods and the idea of good health is sold" is true only in part. We must do something more.

We would not minimize the value of work well done because it is the foundation on which we build for future success of our public health program. To illustrate, if we protect by vaccination our community against smallpox or typhoid fever we are given due credit by the people for this effective service, but it does not necessarily follow that this community will keep up this protection in the future unless we again stimulate their desires and needs, but it does make it easier to sell public health in the future in this community. Neither are they going to ask for or accept the benefits that science offers for the protection of health. We would venture the assertion that not over fifty per cent of the scientific knowledge available today is being used for the protection of health. Why? Because we have not yet "told and sold" the idea to the public as a whole. We need, therefore, to extend more of the benefits of disease prevention to as nearly all the people as possible. This will not be done in one year—no, not even in ten years, and I doubt if we ever reach one hundred per cent perfection. It is a matter of education of the public mind, and education is a slow process at best with no idea of ever learning all there is to know. After eleven years of continuous experience in public health service in Wilson county and city I am persuaded that this job of selling public health has no end and must be continually hammered into the minds of the public if we expect to gain any headway.

The head of the Welfare Division of one of the largest insurance companies in America stated in one of their recent publications in connection with their public health program, "We have found that teaching health shows tangible results." He further states, "It is very gratifying for us to realize that the expectation of life among industrial policyholders has increased nearly ten years, as compared with an increase of a little over six years in the general population." This and other insurance companies are leading the way, so let us follow in their footsteps.

Now that we have discussed some of the reasons WHY, let us turn our attention to answering that other eternal question, HOW?

Certain general principles of salesmanship should govern as in the sale of any other commodity. The salesman himself must lead a clean,

honorable and industrious life. He must be SOLD and thoroughly imbued with the idea himself. Anything short of these personal traits invites failure before beginning. Know your goods thoroughly, so that you may be prepared to answer any intelligent inquiry. Never make extravagant claims, but be strictly honest with yourself and the public. To tell parents that three or four doses of toxin antitoxin will absolutely in every case protect their children against diphtheria is not honest and will eventually react against you and the whole program of public health, not only in your community, but also in adjoining communities.

Many avenues are open for the dissemination of the gospel of good health and all of them should be used at the opportune time.

First, we must sell public health to our official boards—County Commissioners, Town Commissioners, and County Board of Health. Concise and intelligent monthly reports of all activities of the health department should be made, read and explained by the health officer. All moneys received and expended should be itemized and thoroughly understood by each member of the boards so that nothing will be left to the imagination. This will avoid future criticism and create confidence in your work. All new features of your program should be submitted to, discussed and approved by the Board of Health before submitting it to the people as a whole. Care should be taken by the Health Officer never to advocate or recommend untried features in a health program. The adverse reaction to such programs often causes a loss of confidence in the tried features of our program.

Newspaper publicity is today considered by nearly all large businesses as the strong arm of the selling agency. It is true also in selling health. Newspapers mould public opinion as no other agency. We need favorable public opinion. Well prepared articles on timely subjects bring good results. This method of publicity has a distinct advantage over the prepared pamphlets by our State Department of Health and insurance companies, in that the information given is usually of special interest to the public at the time of publication. The bulletin form of publicity, however, has a very distinct place in our public health educational program. In the preparation of this material great care has been used to avoid exaggerated or untrue statements. It is couched in the very simplest words, so that the message might be understood by the average mind. In addition it is well illustrated, making an appeal to the eye.

The health moving pictures add greatly to our salesmanship powers. Visual education is especially beneficial in teaching children. Let us not lose sight of the fact that action, sound and colors make an impression that the printed page cannot convey. The commercial world recognizes this principle in the manufacture of toys for children. The public demand for rich colors is reflected in the dress of both men and women, and in the beautiful colors displayed in the modern automobile. A bright, highly colored health poster carries the message of health much more effectively than the drab, dull poster in black and white.

Set speeches from the public platform are becoming less effective each year, but a timely talk on a timely subject when delivered in a snappy and attractive manner is still one of our most useful methods of getting a message across to the public. It is far better to be too brief than to be tedious.

A health message incorporated in a good story and told by an artist to a selected group of children is one of the most effective means of getting across a definite health message to children of pre-school age and of the elementary schools.

I have been struck with the advantages and effectiveness of personal conferences in matters pertaining to health. The intimate personal contact may be used to great advantage by the health officer and nurse in the quiet office and the home. For instance, the kindly word spoken to the school child about cleaning his teeth, etc., as he is being examined by the health officer. His contact with boy scouts has unlimited possibilities for teaching in the most effective way. The Scouts are tremendously interested in winning merit badges, and in order to receive these awards they must have a knowledge of "Public Health," "Personal Health," and "First Aid." The nurse's visits in the home as a means of teaching health, stands second to none. The opportunity for intimate personal contact with the mother and children of the home creates a wholesome relationship which leads to appreciated service and lasting lessons in all matters of health. Again the nurse has and will continue to wield a great influence in the better education of our young girls who are to be the mothers of the future generation, in teaching the course in "Home Hygiene and Care of the Sick." These little things carry great weight and the good done will not stop with the individual, but may cause him to go out and teach the same things to others in like manner as he has been taught.

Then there is the opportunity to teach and preach by radio broadcasting. This method is not very personal and intimate, but it does have the advantage of reaching thousands of hearers over wide areas at the same time, on subjects of immediate interest to the public. This method of selling health is part of our program here tonight, and we trust that the people of North Carolina will "tune in," listen and benefit by the excellent messages to be delivered. The radio being the latest invention for teaching, selling and spreading news, I am ending my little message of selling public health up-to-date.

DISCUSSION

Dr. E. R. Hardin, (Lumberton): Dr. Smith has given us a practical and comprehensive paper on selling health to the public. As he has pointed out, the health salesman must live health, think health, and talk health. He must practice what he preaches, in order to win the confidence of the public. The indifference and apathy of the public are often exasperating, but the health salesman must not show his annoyance. Nor can he say, "I have shown you the way; take it or leave it." The health salesman must

be enthusiastic but must not let his enthusiasm lead him astray, so that those who come after him will have difficulty in keeping up with him. Reason alone is not effective, and enlistment in the campaign for better health must come through other ways. Most people would rather be a sick millionaire than a healthy clerk, and we must show them that the sick clerk will not become a millionaire and that health is not an end in itself but that it is a means of attaining happiness and comfort.

Newspaper publicity is one of our greatest selling forces. Health publicity should be practical and should meet the requirements of a newspaper expert. Most of us unfortunately have not the time and training for this sort of work. My own experience is that writing something to be released for publication is the hardest sort of work.

If we are to sell public health we must use all available methods; that is, use everything that the voluntary agencies and other organizations have to offer us. Personaly, I find a mimeograph machine to be indispensable. The various letters and articles run on a mimeograph machine may be illustrated with appropriate drawings.

I believe that one of the greatest factors in selling health in most of our counties has been the work in the schools. Probably in no other way does the health officer make so many important contacts. It is said that 85 per cent of our knowledge comes to us through the eye. Health is a subject that lends itself to thinking in pictures; therefore the health salesman should use every opportunity to present this subject by the use of pictures, particularly moving pictures.

The health salesman has the opportunity to talk to groups of people from all walks of life. He should use these opportunities to present briefly and forcefully some message in regard to the local work.

We should realize that, while health is salable, selling it is a gradual and slow process; and we should never lose heart. We should learn a lesson from the experience of the Church, which has been telling men for centuries about the Ten Commandments, which nevertheless are broken daily.

HEALTH SURVEY OF PITT COUNTY

By W. E. Futrelle, M.D., Greenville

The survey of health services in Pitt County made in November and December of 1928 was at the invitation of the North Carolina Federation of Woman's Clubs. This survey came as a prize to North Carolina from the American Federation of Woman's Clubs; the prize being offered to the state in which the greatest number of individual Woman's Clubs had undertaken during the past year some sort of health activity. This prize consisted in the services of Dr. W. F. Walker, field director on administrative practice from the American Public Health Association, and Miss Anne Whitney, acting director of Health Education from the American Child Health Association, Pitt County being the locality selected in the State for making the survey.

This survey was made in accordance with the appraisal form for rural health work as put out by the American Public Health Association. The report is very comprehensive and lengthy and I shall only give you a brief outline of it. Pitt County lies in the eastern part of North Carolina, within the coastal plain. The population at present is around 53,000. Approximately half the population is rural and half urban, and approximately half white and half colored. The population is increasing at around 1,000 each year. 44.8 per cent of the population is under 16 years of age. In North Carolina as a whole 42.5 per cent is under 16 and in the United States as a whole 33.4 per cent.

The total assessed valuation of property in the county in 1928 amounted to $44,818,701.00. The annual income is estimated at $14,000,000.00.

There are in the county 35 physicians, 9 dentists, one hospital, and a county health department.

The staff of the public health service consists of a full-time health officer, two nurses, one clerk-stenographer, one part-time sanitary inspector employed by the town of Ayden and two part-time sanitary inspectors employed by the town of Greenville. A considerable part of the health officer's time is taken up with medical service for the sick at the county home and county prisoners in jail and at the convict camp. A comment in the report says that this is a service which is not at all related to public health and should in no wise be a responsibility of the county health officer.

The appropriations for public health work in the county during the present year amount to $13,350.00 of which $7,500.00 is from the county; $3,750.00 from the state; $1,500.00 from the city of Greenville, spent on part-time sanitary and milk inspection, and $600.00 from the city of Ayden for milk and meat inspection. These services in sanitation in Greenville and Ayden are not directly under the jurisdiction of the County Health Officer and are not carried in the county budget. It is recommended that all sanitary and food inspectors should be employed by the county and be under the direct supervision of the County Health Officer. The total expenditures amount to 25.2 cents per capita for the population of the county, and it is apparent that this is a very modest expenditure for this essential service.

A study of the vital statistics of the county shows that during the year 1927 there were 31.4 live births per 1,000 population. The ratio of births to deaths in 1927 was 3.2 to 1 as contrasted to 2.4 to 1 for the state. There has been some decrease in birth, some decline in death rate, together with some decline in infant mortality within the past few years. In the report of the survey recommendation was made that vital statistics be filed directly with the health department instead of with the register of deeds, as is now done. In this way vital statistics will be available to the Health Officer and used as a guide for direction of health activities.

Regarding control of communicable diseases the report recommends a more complete epidemiological history of all cases of contagions; the use of spot maps or chronological charts to show the time and space distribution of cases occurring; regular and routine visits by the health department staff to all cases of communicable disease for the purpose of instruction and supervision. In the case of diphtheria it has been the custom in some instances to shorten the period of quarantine, provided two negative cultures were obtained. This was said not to be in accordance with the best practice. Of 6,000 children immunized against diphtheria in 1927 in the county, 27.7 per cent were under 5 years of age; 45.5 per cent under 10 years of age. Attention was called to the importance of reaching a greater number under 5 years.

Typhoid fever is still regarded a predominant health problem in Pitt County, there being 5 deaths in 1926, 7 in 1927, and 4 in 1928 from this disease with a gradual decrease since 1918. The problem to be met by improving general sanitary conditions, education of public with regard to means of its spread; more active immunization campaigns; the requiring of negative cultures from stools and urine before release of cases, and an attempt to locate and supervise typhoid carriers. Equally important is a campaign for protection of drinking water through construction of protected wells and the providing of safe means of excreta disposal through sanitary privies or otherwise.

No special recommendations were made concerning the other contagious disease except to urge instructive nursing visits and general health education in the early detection and care of these diseases of childhood.

Since 1922 there has been a venereal disease clinic operated by two practicing physicians. Only syphilis is treated in the clinic. A standard fee of $2.00 per treatment is charged. The county furnishes the medicine. The clinic is held once a week in one large room in the court house. It was recommended that better clinic quarters should be had; that better facilities for work should be provided; that there should be a separation of the sexes; that the patient should have privacy while being treated; a more elaborate history taking and more extensive follow-up of the cases treated.

Dr. Walker's report has the following to say about tuberculosis in the county: "By a rather unusual arrangement the reporting of tuberculosis in North Carolina is directly to the State Sanatorium instead of either the local or the State Board of Health. As a result of this the local communities in general know very little about their tuberculosis problems and take relatively slight interest in this service. There is no one in the local community who is conducting an active and aggressive campaign for case reporting or case finding. It is not surprising, therefore, that in the four years from 1924 to 1927, inclusive, there were 180 deaths and only 132 cases officially reported to the Sanatorium. A striking feature of this presentation is the preponderance of cases reported among the white population as contrasted with the deaths among the whites. Approximately

two-thirds of the cases reported are among the white population, whereas only one-fifth of the deaths are in this group. Judging from the figures which we have, deaths among the white group are about 50 per 100,000 population, and for the colored the rate is in the vicinity of 150 per 100,000 population. These figures serve very well to define the magnitude of the tuberculosis problem in the county. In the two-year period, July 1, 1926, to June 30, 1928, 25 patients from Pitt County were admitted to the State Sanatorium, 16 of these were white and 9 were colored. The total stay of these patients amounted to 5,451 patient days or about one-third of the total hospital days considered essential for a tuberculosis problem such as exists in Pitt County. There are at present no facilities for the treatment of the potentially tuberculous case in the county, either through open air class rooms, summer camps or other similar institutions. The development of consolidated schools in the county would seem to open the way for the care of tuberculosis suspects and contacts in suitable class rooms where the school routine could be adjusted to their physical condition."

The supervision and promotion of maternity and child hygiene in the county is one of the most active functions of the County Health Department. During the year 1927 there were 1730 births in the county. Between 40 and 45 per cent of these births were delivered by midwives. There are now 52 midwives. That number has been reduced from 124 since 1924. Classes for instructing midwives have been in operation since 1925.

Live	1922	1923	1924	1925	1926	1927
Births	1806	1666	1776	1599	1720	1628
Deaths under 1 year	189	176	159	161	163	109
Maternal Deaths		17	20	17	15	11

Report says: "The unsatisfactory mortality of mothers and infants is only reducible through improved prenatal service and a closer relationship with the venereal disease control work." More intensive clinical service for infants in the last few years has no doubt been a factor in reducing the death rate of infants. The area of the county and the size of the problem make it impossible for the present nursing staff to accomplish in this field what has been shown through demonstrations elsewhere to be possible. Of the deaths under one year of age from one-third to one-half occur under one month of age. Obviously to effect any reduction in this group the prenatal service must be extended.

The pre-school population of the county numbers about 8,000 or about one-sixth of the total population and merit a large share of attention from the Health Officer, both from the standpoint of its size and also from the fact that the hygiene of these important years has a great deal to do with health in adolescent and adult life. To meet the responsibility for the protection and promotion of health in this age group the Health Department has provided medical conferences, nursing conferences, and has furnished nursing home visits for pre-school children. Its program of

immunization against diphtheria and smallpox was in 1927 aimed largely at this group, though it has not yet adequately covered the field. There is still much to be done in an educational way with the parents of Pitt County to bring about the proper appreciation of the importance of this period of life.

The program of school hygiene in Pitt County is carried on jointly by the County Board of Health and the public school system. There are in the schools around 18,400 children, nearly half of which are colored. There is a turnover in school population of from 10 to 15 per cent, probably due to the fact that some 40 per cent of the land is cultivated by tenants. The program of school health so far as the County Board of Health is concerned has consisted of a primary examination of the children by the Health Officer, assisted by a nurse, with such follow-up examination as may be indicated by the findings of the first examination. An attempt was made in 1927 to cover the entire school population in the schools visited. This, however, does not prove to be a wise procedure, considering the meager size of the staff. The examination covers generally accepted important items. The results, however, do not show the expected number of defects corrected, probably due to a large degree to the inability of the nursing staff to follow closely those children shown to have defects.

The Health Department has no sanitary inspector as a part of its staff. It is dependent upon help from the State Board of Health, or upon the local sanitary inspector in Greenville for such service as is needed. Obviously, this staff can not meet the needs and efficiently handle the problems of sanitation in so large a rural county. A sanitary survey covering the county was made in January of this year by a representative from the Sanitary Engineering Department of the State Board of Health. The survey covered the sanitary conditions in and around the schools in the county. Through the activities of the Board of Health nine dairies now supplying milk in Greenville and Ayden are inspected.

The laboratory service for the county is provided by the State Laboratory of Hygiene at Raleigh. Cultures are sent directly by physicians or through the County Health Department. The volume of service does not in any way indicate the importance of this phase of public health work and steps should be taken, so the report recommends, to make the laboratory more widely used by physicians and by the Health Department as an aid in health protection and promotion.

The report recommends that there be formed an active organization for the spread of popular health instruction, literature on various communicable diseases, on venereal diseases, tuberculosis; water supply in rural areas; and excreta disposal, should be uniformly distributed. Progress reports of work done and results accomplished should be kept and made known to the public. An excellent opportunity is offered the Woman's Clubs and other civic organizations to assume responsible charge of such an educational program, working out with the Health Officer a plan of newspaper publicity, lectures and other educational services to cover the county.

SUMMARY OF RECOMMENDATIONS

I. *Vital Statistics.* It is recommended: (1) That the County Health Department tabulate and currently analyze the statistics of births and deaths under the regulation of the state registrar, as indicated in the appraisal form for rural health work; (2) That a brief report of the outstanding statistical material be prepared and distributed to those in the county and outside who would and should be interested.

II. *Communicable Disease Control.* It is recommended: (1) That epidemiological history cards such as the form recommended by the committee on Record Forms of the American Public Health Association or similar be kept for every case of typhoid fever, scarlet fever and diphtheria. (2) That the present ledger form of disease record be replaced with a simple card file; (3) That spot maps be kept of typhoid fever, diphtheria and smallpox cases and deaths; (4) That the control practice for communicable disease be made to conform with the approved codes of the American Public Health Association; (5) That continued emphasis be placed on the immunization of pre-school children against diphtheria.

III. *Venereal Disease Control.* It is recommended: (1) That the American Social Hygiene Association be invited to make an incidence survey; (2) That suitable quarters be provided for the venereal clinics; (3) That the direction of this clinic aside from the treatment be taken over by the Health Department; (4) That a real effort be made to gather the case history called for by the clinic record cards; (5) That a follow-up service be established to assure so far as possible treatments being continued to completion and the examination of contacts and suspects.

IV. *Tuberculosis Control.* It is recommended: (1) That the entire State procedure on reporting of active cases of tuberculosis be changed so that reports of cases shall be to the County Health Department; (2) That special effort be made to stimulate reporting of all cases; (3) That clinics be arranged for examination of contacts and suspects; (4) That nursing service to home care be provided; (5) That arrangement be made for segregation of suspects and contacts among school children into special classes with the school day adjusted to their physical condition.

V. *Prenatal.* It is recommended: (1) That arrangements be made for educational prenatal clinics at different parts of the county under medical direction; (2) That the nursing staff be increased to permit a more thorough service to each case.

VI. *Infant.* It is recommended: (1) That conferences of mothers in different parts of the county be organized to permit the nurse to give instructions on infant care, under general direction of the County Medical Society.

VII. *Pre-School.* It is recommended: (1) That clinical services for pre-school children be increased with particular reference to examining children just prior to entering school.

VIII. *School.* It is recommended: (1) That a county school health council be organized with representatives from community clubs and agencies as well as representatives from the educational and health departments, for the purpose of awakening the community to its school health needs and of uniting all agencies of the community to meet those needs with full community support: (2) Adequate medical and nursing personnel for effective health service to all county and city schools.

IX. *Sanitation.* It is recommended: (1) That a sanitary inspection service covering the county be provided in the health department to include water, milk, foods, excreta disposal, and mosquito control.

X. *Laboratory.* It is recommended: (1) That a local laboratory service be provided to cover water and milk samples collected by local inspectors.

XI. *Popular Health Instruction.* It is recommended: (1) That a health council be organized of all interested groups, both official and voluntary to plan the broad community services of health education, using the State Departments of Health and Education, and other agencies within the State.

XII. *Staff Personnel and Budget.* It is estimated that within a period of from five to seven years the most of these recommendations should be carried out.

Staff recommended under present conditions of population and facilities: 1 health officer, 1 school physician, 1 dentist, 2 clerks, 1 sanitary inspector, 1 milk and food inspector, 1 laboratory technician, 9 nurses.

Budget recommended, approximately one dollar per capital, or around $50,000 annually.

DISCUSSION

Dr. C. N. Sisk, (Raleigh): Making a survey and an appraisal of the health work being done in a county, as was done in Pitt County by the American Public Health Association and the American Child Health Association, is merely the application of a good business principle to health work. It points out the strong points and the weak points of the health program. The appraisal form as devised by the American Public Health Association is the initial attempt to unify public health work and gives the advantage of the weak department's securing proper credit in a manner that does not react against it because of the fact that it is a small county. The earning of 425 points of a possible 1,000 by the Pitt County Health Department, with an expenditure of $13,350, or 25.2 cents per capita, is very creditable when compared with the earnings of the department under the Commonwealth Fund in North Dakota over a period of five years, with an expenditure of $3 per capita and with an earning of 875 points out of 1,000. It is obvious that the first few hundred points are very much more easily obtained than the points above that.

I see nothing complicated about the survey and appraisal made in Pitt County, and I see the need of the application of this principle in

every county in North Carolina. It seems to me that every intelligent health officer can take the report of the appraisal made in Pitt County and apply it to his county with as good results as in Pitt. I was very glad to hear Dr. Laughinghouse say he was going to have a copy of this report furnished to every county health officer, for by study of this appraisal and comparing it with your own county you can see whether your work is balanced or unbalanced, what you are neglecting and what you are overworking, for I think sometimes we lay too much stress on parts of the work and neglect other parts.

Dr. L. B. McBrayer, (Managing Director, N. C. Tuberculosis Association, Southern Pines): I should like to say something about the recommendation in regard to the tuberculosis problem. The reporting of tuberculosis, as was stated, is to the Extension Department of the State Sanatorium for Tuberculosis. When the cases are reported there, unless the physician requests otherwise, a pamphlet is sent to the patient giving him certain information in regard to the prevention of the spread of infection, which every patient ought to know. In addition to that, there are offered to him sputum cups, in order to carry out the instructions given in that pamphlet, at a wholesale price or less and such other things in the way of disinfectants and gauze for handkerchiefs, etc., at the same kind of price, in order that he may carry out the instructions received. Now, I could imagine that the public health service would institute a very much better thing than this if it were going to institute an ideal arrangement to take care of the tuberculosis cases in that county, and where there are as many cases as there are in Pitt County it does seem that they ought at least to have a county sanatorium or a joint sanatorium with an adjoining county or ought at least to have clinics—which I do not believe I heard mentioned. But the idea I wanted to leave with you is that unless they are going to put in something very much better it would be wiser not to disturb what we have now. If the county health officer wants these reports he can get them by a simple request to the Extension Department of the State Sanatorium. He will get them on the first of each month, or oftener if desired; and the sending of the reports to him will continue without any further request.

On motion of Dr. F. M. Register, the meeting adjourned in honor of the memory of Dr. J. W. McNeill, of Fayetteville.

AFTERNOON SESSION

The Association met in the auditorium of the Pilot Life Insurance Company, Sedgefield, at 3:00 p. m., with President Hudson presiding.

REPORTS OF COMMITTEES

Dr. R. L. Carlton, chairman of the Committee on Visitors and New Members, stated that the committee had no report to make.

The reports of the other committees were deferred for the present.

ELECTION OF OFFICERS

The following officers were elected: President, Dr. J. Roy Hege, Winston-Salem; Vice-President, Dr. D. E. Ford, New Bern; Secretary, Dr. F. M. Register, Raleigh.

THE SUMMER CAMP AS A MEANS OF CARING FOR TUBERCULOUS CHILDREN

By C. W. Armstrong, M.D., Salisbury

The record of the North Carolina Sanatorium in the treatment of tuberculosis is one of which all North Carolinians are justly proud. They have given back to society hundreds of useful citizens, many of whom entered there with all hope gone. But the most far-reaching thing and that which will eventually be the death blow to the Great White Plague in North Carolina is the contribution they have made to our knowledge of tracheobronchial, glandular or childhood tuberculosis. We, of all people, should realize that the fight against any disease should be one of prevention rather than cure. How then may be prevent tuberculosis? If I should ask how we might eradicate diphtheria or smallpox the unanimous answer would be, "By bringing up an immune population." So also is this true of tuberculosis. We cannot of course create an immunity by innoculation or vaccination but there are other effective means. Dr. McCain will tell you that 22 per cent of our North Carolina school children will react positive to the tuberculin test which means that they have present in their bodies live tubercle bacilli. He will tell you also that two per cent of the entire school population have disease processes caused by the tuberculosis germ. As you are of course aware, practically all of this is of the glandular type and has not as yet caused any pathology in the lung tissue itself. This is the group from which we may eventually expect our cases of pulmonary tuberculosis. This means that there are in North Carolina amongst our school population 16,975 potential cases of pulmonary tuberculosis. Is there then any possibility of our winning the fight against tuberculosis until we have become actively interested in this phase of the problem? First let us examine into the possibilities of doing something with this group of children. I anticipate that you would ask among others the following questions: Is it a state or county problem? Is it practical? Is it worth while? Can the average county or municipality afford the treatment of these children, or rather, I should say, the prevention of tuberculosis in these school children?

There are one hundred counties in North Carolina and there are 850,000 school children in need of examination. It is obvious that the State Sanatorium with its limited funds and personnel in the Extension Department cannot hope to more than scratch the surface in so far as the finding of these cases is concerned. The technique of the tuberculin test is simple, being the same as that of the Schick test and the interpretation

of the reaction is not difficult. We do not hope to find a great deal in the chest upon physical examination of these children and examination might well be done by any physician whether he is especially qualified in chest work or not. X-ray is available in most of the communities and I am sure that all of us could get help from the State Sanatorium in the interpretation of our X-ray plates. If the examination can not be done by the State Sanatorium and can be done by the local health officer, certainly the examination of these children is a local problem. For the treatment of these cases the Sanatorium has avaliable sixty beds, this is of course an insufficient number to take care of even the smallest county in North Carolina, to say nothing of all the children in the one hundred counties in the State. This proves conclusively that the whole thing is a local problem, that these children, if they are to be treated at all, must be treated at home and it remains only for us to determine whether or not it is practical, worthwhile and whether we can afford it. We shall try to answer these questions collectively.

The best informed men in tuberculosis work tell us that practically all adult tuberculosis is contracted in childhood and that if the child escapes the adult will escape. There is no doubt but that to a large extent this statement is true. They tell us also that fifty per cent of these children who have tracheobronchial tuberculosis will handle their infection successfully without treatment. If this then be true is it not reasonable to suppose that practically all of the remaining fifty per cent will do so if they are given the proper treatment? If we believe these statements that a large number of our children are infected, that they are all potential cases of pulmonary tuberculosis and that most of them will be able successfully to combat the disease if treated, and certainly none of us are in a position to dispute the truth or accuracy of these statements, then the question as to whether or not it is worthwhile has been answered.

I have told you that the State has approximately sixty beds and there are 16,000 children needing treatment. Then comes the question as to how we are to care for them at home. Where this home treatment has been tried it has been found that parents will allow their child to go to a local preventorium who will not under any circumstances consent for them to go to the State Sanatorium, not that they have any prejudice against the State Sanatorium, but all of you know the old story of the parent loving the child so much that they simply cannot give it up. With the children being treated at home they may see them once or twice a day if they so desire. The parents and the children are better satisfied and you do not have the troublesome thing to contend with of parents removing their children after a few weeks' stay. Then too, the minimum rate at the State Sanatorium is one dollar a day and a high percentage of the parents of tuberculous children cannot pay the price. I think I can show you that the children can be given the same treatment at home for approximately half this amount. Most of these children need only three to five months treatment and strictly speaking, they are not sanatorium cases and the

State institution should not be expected to care for them. Let them take the more seriously impaired child and then let the county or city look after these simpler cases.

Is it practical? I hope that you will pardon this personal reference to an effort to find out whether or not it is practical and I am going to burden you with a resume of our effort in Rowan County last summer in an effort to convince you that it is practical and worthwhile. Our experience has convinced me that it can be done so economically that the poorest county in North Carolina can well afford a preventorium at least during the summer months. Not even the most idealistic of us would even hope to see a tuberculosis sanatorium in every county in the State but this movement on the behalf of the children can be done at so little cost, is so worthwhile and has such a public appeal that it's own momentum will almost carry it along once it is started. Practically every county in the State is well supplied with civic organizations, women's clubs, etc., and let it be said to their everlasting credit, that they are all anxious to do something worthwhile. Why then should we not give them this opportunity to really do something? In our own case the preventorium was sponsored and established by the local Kiwanis Club and financed as follows:

Amount contributed by Kiwanis Club	$380.00
Amount contributed by City of Salisbury	250.00
Amount contributed by County of Rowan	250.00
Amount contributed by Tuberculosis Asso.	877.40

While the Kiwanis Club was not the largest contributor of actual cash they did give it the necessary push to get it over, to sell the idea to other organizations and to work out the innumerable details that are necessary in actually getting a thing of this kind going. We were late in finishing the examinations last year and consequently the camp, at considerable expense, had been made ready for occupancy and not a single parent had been approached about sending his child to the camp. You will well understand why I had a few restless nights about that time while I was wondering whether we were going to have a camp without any children, but like most of our troubles, this one did not happen. Not a single parent refused, on the other hand we had twice as many applicants as we could care for. The preventorium opened on June 5th and closed on August 25th, a total of 82 days. The Health Department nurses rotated on service and one nurse was on duty all the time. The Health Officer acted as medical supervisor and the entire medical profession of the county were subject to call at any time. Routine of treatment was exactly that carried out in the State Sanatorium. The children wearing only trunks and observing rest periods, taking sun baths, etc., as outlined by Dr. McCain for the treatment of his cases. Our nurses all spent some time with Dr. McCain prior to our opening, observing his methods. The results are as follows:

1. Thirty children treated.

2. Total cost $1,800.00 or an average of approximately fifty cents per day per child.

3. Every child given a thorough re-examination upon admission.

4. Fourteen children operated on for tonsils and adenoids.

5. Two children treated for hookworm.

6. All children had teeth cleaned and those needing dental corrections were given what was necessary.

7. Total gain in weight for entire group, 189 pounds.

8. Not a single removal from camp during entire period. All children remained the full 82 days.

9. Highest individual gain in weight, 17½ pounds.

10. Lowest gain in weight, 1¾ pounds.

11. Only one child failed to gain and he was normal in weight upon admission.

12. All except five children gained to normal weight or better.

13. The combined percentage underweight of these five children on admission was 82 per cent and on discharge 54 per cent, an average reduction in percentage underweight for these five children of 10 per cent.

14. Of the group of thirty children not more than three actually need further treatment.

15. Of the 25 children returned home normal in weight a monthly check has been made for seven months from time discharged. All children are still normal in weight with one exception and that child has recently undergone a severe acute illness.

We realize of course that when we claim to have given these children an immunity to tuberculosis by bringing their weight up to normal and thereby increasing their natural powers of resistance, that we cannot guarantee to them a power to resist continued overwhelming doses of tubercle bacilli. No treatment of this kind can be considered wholly satisfactory without successfully tracing their source of infection and removing them from same. These children have been fed tubercle bacilli by some one and so we have endeavored to trace the source of this infection and insofar as possible to remove the menace. You will be able to judge what measure of success we have had when I tell you that in the examination of all persons with whom these thirty children have been coming in intimate contact, we have found 45 cases of active pulmonary tuberculosis. To our own satisfaction at least we have proven that the matter of caring for tuberculous children at home is very much worth while, that it is practical and that the plan is workable. It is our belief that this work should be extended so that to include the approximately 280,000 school children in North Carolina who are undernourished without regard to whether they show signs of a tuberculous infection.

DISCUSSION

Dr. P. P. McCain, (Superintendent, State Sanatorium): The work that Dr. Armstrong did in his camp last summer was an inspiration to the

people of his county and of the adjoining counties to such an extent that Davidson County has already put over a program for establishing a camp this summer, and Cabarrus, the adjoining county on the other side, has done the same thing. Definite arrangements have already been made in those counties. In Catawba County, also, an appropriation has been made and work has already been started on a children's sanatorium, all of which I think is an outgrowth of the work Dr. Armstrong did in his camp at Salisbury in Rowan County.

I am glad Dr. Armstrong emphasized the fact that this is work which can be done by health officers or by any physician who is interested in pushing it through. The test can be given en masse to large groups of children; it is easy to give and easy to interpret. This test will select those children who need to be studied, and any careful medical man can make a careful examination of these children for tracheobronchial tuberculosis as well as a specialist. They have no physical signs in their chests from this tracheobronchial infection and usually have very little involvement elsewhere. By making X-ray studies anterioposteriorly and obliquely of these children who are positive to the tuberculin test the enlarged tracheobronchial glands can be seen and these cases can be diagnosed.

I do not believe Dr. Armstrong brought out very fully the type of cases to be treated. First, no children with germs in the sputum are treated in these camps. These cases of tracheobronchial tuberculosis are not open cases. If they have definite pulmonary tuberculosis they should be taken to a hospital; they can not be taken care of in a camp. Children from homes in which there is tuberculosis are suspicious cases and probably should be taken to the camp. If there is an open case in the home constantly dosing the child with sputum practically every child is infected. It is often useless to tell these adult cases that there is danger of infecting the child. But if you tell the adult the danger is so great that you are going to take the child away from home for a period of months, he will be so impressed that he is much more likely to observe the precautions; and not only that, he may be willing to go away to a sanatorium where he will learn to observe the necessary precautions.

This is a wonderful work which Dr. Armstrong has started, and we hope it will spread to the other counties of the State.

Dr. L. Jack Smith, (Wilson): I do not know of a paper I have heard today that has impressed me as much as this has, because it tells of something practical and something we can all do.

There is one question I want to ask Dr. Armstrong, and that is what are the means of housing and what is the cost. Did he use tents or houses, and if houses, how were they constructed?

Dr. Armstrong, closing the discussion: There is just one point I want to stress in addition to those I brought out in the paper; that is about these children who are undernourished. We hear a lot in North Carolina about underweight children and undernourished children. Many of them will not react positively to the tuberculin test, but we know that they are

undernourished and underweight and are easy prey to the tuberculosis germs. I do not think this work ought to be confined to the tuberculous child. I think we pay too much attention to food in these underweight cases. We know that children in good homes get plenty of food, but they burn it up too rapidly. Another fallacy is that children rest so quickly; we think they can sit down for a few minutes and get rested. That is not right. These children in our camps and at the State Sanatorium get five or six hours' rest a day flat on their backs.

In regard to Dr. Smith's question, we used tents. The tents had floors and had flaps which lifted up at the sides to permit free circulation of air. We used the old country club building, which had the advantage of being sewered and lighted and watered and all that, purely for a dining hall, swimming pool, showers, etc. We had three tents, one for girls, one for boys, and one for administration and quarters for the nurse.

MAKING THE SCHOOL CHILD HEALTHY

By L. B. McBrayer, M.D., F.A.C.P.

Managing Director, North Carolina Tuberculosis Association, Southern Pines

I have an idea or two that I want to leave with the health officers and everybody else present. We fellows have done a pretty good job; the State Board of Health particularly is doing good work in preventing communicable diseases and other preventable diseases; but, as Mayor Jeffress said this morning, we have not even scratched the surface yet. He was speaking more wisely than he knew, I suspect. So there are a number of things that remain to be done. You heard Miss Harris, in her inimitable way this morning, tell you about the part the teaching profession, the educators, have in this program of the child; and that is the biggest program the State has. Frederick Taylor has been doing a fine piece of work and is a fine fellow, but the biggest piece of health work in North Carolina or any other state is with the children of the state, and that is what I want to present to this audience. Away back before the time when any of us can remember the doctor had his saddlebags and threw them across his horse and went out on horseback; he could not travel in any other way. He had a few tinctures and extracts and powdered calomel, etc., and that is what he practiced medicine with. And they do say they got along pretty well. But as time went on we have gotten other things to help us in practicing medicine. We may take the clinical thermometer as an illustration. The clinical thermometer tells us that the patient has or has not a rise of temperature. Sometimes it tells us that the patient has a rise of half a degree of temperature every day, and you hunt from the toe nails to the scalp and can not find any cause for that rise of temperature. You may be sorry then that the clinical thermometer was ever invented and that the laity know how to use it, and you may tell them to break the thermometer

and go out in the sunshine, but the clinical thermometer is a great aid to the doctor.

Now, the child when it gets up to school age or sometimes before is underweight or undernourished. There is a good deal of difference between those two terms. I am not going to discuss what is normal weight; we are pretty well agreed on what is the average normal weight for a child of a certain age and height, though of course there are some exceptions due to familial influence, etc. We are pretty well agreed that the weight is the best clinical thermometer we have on this particular thing, and you will find that about twenty-five to thirty per cent of the children are underweight. But after you have found those children underweight you have just gotten started; you have to find out what is the matter with them, just as you do when they have a rise of temperaturee. You will find that some of them have malaria, and you have to treat that. You will find that they have hookworm infestation, and you have to treat that and keep them from reinfection. You will find that they have bad teeth and adenoids and bad tonsils, etc. You have to run a hospital, and that is what Dr. Armstrong did.

But you do not want to stop with thirty in a county; the other children have to be taken care of. They can be taken care of and can be taken care of easily. Miss Harris told you this morning that the teachers and educators have gone their full length. They are more interested today than they have ever been in North Carolina; they are ready to hook up with us and put this thing through. The teachers can not do it by themselves, and somebody else has to do it. I practiced medicine, and I know the doctor's side of all these propositions. The last time our State Medical Society met in Greensboro the speaker stood before the Society and said there are certain symptoms by which a tentative diagnosis can be made of tuberculosis and if the doctors do not learn them the people will. I know good and well that the practicing physician ought to take these children and give them whatever they need, and I know just as well that they are not going to do it, and I do not blame them. I would not, either. Dr. Armstrong got a crowd of them together over there at his place and every physician in Salisbury volunteered to go over there and do whatever was needed. They will do it when you get the children together, but they have not time to go to this place and that place and the other place. You will get the cooperation of the physicians if you go about it in the right way. And this thing of promoting the health of the child is the biggest thing for a state health department or a county health department or a city health department or a state department of education or a county department of education.

The most popular term now used in talking of education is project. Some fifteen years ago a man by the name of DeForrest worked out eleven projects that children should do in health and hygiene, and that has not been improved upon. One of the projects is rest. Few of us recognize the importance of rest, particularly in children. In order for the

children in the homes, who are going to school every day, to be brought up to the proper state of nourishment we must do these things.

Someone was speaking today of accidents. One of the projects is this: "I looked to the right and to the left before starting across the street." There is no way to learn how to do things without doing them. This thing that was worked out by DeForrest is one of the most constructive things in the life of our children that has been brought out in many a day. It is lasting, too. I do not care how high-brow our education gets, those things remain, like the thermometer; and I commend it to you in this program

DISCUSSION

Dr. R. S. McGeachy, (Kinston): The question of pre-school examination comes up. I examined two little girls, twins, both normal and healthy-looking, so far as I could see. But when I examined the heart of one I found a definite murmur of the heart that no one seemed to know anything about. The question was what we could do without doing more damage than we did good. I did not know what to do about it. Finally I told the children to tell their mother the next time the family physician came around to have him listen to their chests. I do not know just how far to go in examining other peoples' patients.

I should like to ask Dr. Crowell just what degree of infection or Wassermann reaction should exclude a person from work in such places as dairies, etc.

Dr. A. J. Crowell, (President State Board of Health, Charlotte): Answering as far as I can that question, I should like to whisper a little suggestion into Dr. McGeachy's ear about the heart condition found in the child. I think it would be wise for him to write a little note to the child's family physician and tell him what he found and let him assume the responsibility.

As to the other question, I can not make a ruling, but I can give you my judgment. I think open sores are more important than the Wassermann reaction. If the patient has no open sores of the mouth, etc., even with a four plus Wassermann I think there is very little danger of the patient under treatment spreading the disease by working in a dairy, restaurant, or in any way handling food.

THE AMERICAN PUBLIC HEALTH ASSOCIATION'S APPRAISAL FORM FOR RURAL HEALTH WORK

By W. F. Walker, M.D.
American Public Health Association, New York City

It gives me great pleasure to be with you here today and to see this conference in action. I have had in the past the good fortune to be associated with Dr. Rankin, who is a member of the committee on administrative practice, for which I work, and also for the past year with Dr. Laughinghouse. I get inspiration from attending these meetings of health

officers. The morning program ran true to form. It had much in it that told of real work. I remarked to Dr. Laughinghouse that it seemed to me the keynote was cooperation with other agencies, that is, making the public health program really public.

In trying to organize my thoughts on the subject of the appraisal form for presentation to you, it seemed to me that after all public health administration is really a union of good medical practice and good engineering practice and that we might speak of it as either public health administrative engineering or public health administrative practice. Looking at it from the public health standpoint, we begin to see that what is essential is a diagnosis of the local conditions, before we begin to apply treatment; and if we look at it from the engineering standpoint we see that what is needed is a very sound and accurate survey before we sit down to our drafting table to lay out a plan.

The Committee on Administrative Practice of the American Public Health Association was formed in 1920 for the purpose of studying the way in which the job is done in various cities of the country. They made a survey, with the help of a great many people, of all cities of over one hundred thousand population at that time and published a report (Bulletin 136 of the United States Public Health Service). In 1924 the American Child Health Association became interested in the health of smaller communities and undertook a survey of the health of the population in cities of from forty thousand to one hundred thousand. The United States Public Health Service decided that it would make the study complete and made a re-survey of all the cities of over one hundred thousand—in fact, over seventy thousand. So we now have a mass of material covering all these surveys. The question was asked, what are we going to do with it? Someone who had had experience, I presume, with the dairy score card, suggested scoring it, and that seemed to be the easy way out.

As to the construction of a scoring method, the first thought was that it was to be used as an analysis of this material already gathered. They thought they could work out what cities were doing a good job and what cities were doing a poor job, etc. But the people working with it saw that this score card might be used for work in the field. Some of the leading health authorities were called in to advise the voluntary agencies, the American Public Health Association, the American Child Health Association, the National Tuberculosis Association and other volunteer agencies, to decide what could be done with these score cards. We tried to get down to the roots of what is the value of the various procedures carried on at that time. So we came to this appraisal form and decided it was to be three things. First, a comparison of those activities which are in common use in different cities—vital statistics, venereal-disease control, tuberculosis control, maternal and prenatal care, laboratory service, popular health education. In those communities we found not one which was not being carried on. So we took those as the necessary activities. The next question was, how can we judge of those activities? We immediately thought of

records well kept, of vital statistics; we thought of communicable diseases, immunization against communicable diseases, immunization against smallpox, of the ordinary standard practices with regard to the release of cases from quarantine, and the period of quarantine. They set up for each of these activities well recognized criteria by which to judge the value of the service. They went back and said, "What standard shall we set up?" They set the standards so that 25 per cent of these cities exceeded the standard. It was not idealistic; it was practical; it contained only those activities common to most cities; it set up criteria which were acceptable to health officers pretty much all over the country.

The rural form was modeled after that first city form. In the rural form, unfortunately, we did not have the benefit of country-wide surveys of health conditions and rural health standards; we had to set up standards of our own, derived largely from the city standards. I do not know how it has happened to be thought that it might take a dollar per capita to do effective health work in the city but in the country we could cut it down to half that sum. The committee came to the conclusion that there is as much need for health work in the country as in the city, but we can not set the standards as high at present because of the difficulty of doing the work; not that there is less to be done or less need for it to be done but because at present the work is too difficult and costly.

In the original draft of these forms we combined these two, the appraisal and the survey. But as we used that we found it necessary to separate the two. The survey schedule is a description of the outstanding problems in your community and the relation of those problems. As we would not undertake treatment of a patient without a careful examination, so we ought not to recommend health work for a community until we know what the needs are and what service is being rendered that community by official or unofficial agencies. It does not have to be done by..... .....; as Dr. Sisk said this morning, any intelligent person can take the appraisal form and apply it to his county or community.

When this appraisal form was originally planned there was a great deal of talk about comparison of one city with another and of one county with another, but that idea has largely vanished. The greatest use it has in your local community is to size up the needs of the community and what you ought to have to meet those needs and the growth from year to year. The health officers who have used these all over the country find that the monthly check sheet or monthly report is a real stimulus to the health officer in keeping him up. We know that the log of a ship is kept up right at the wheel, so the captain may know how fast he is traveling. This monthly report is the same thing; it shows you how fast you are progressing. The annual report, made by yourself or someone else, shows how much has been accomplished and what yet remains to be done. Many health officers make up their annual reports in such form that any business man can interpret it and can see what is being done.

The appraisal has the ability to sum up, I might say, in a figure what you are doing, the progress you are making, and scoring it. You may say your health department measures up to 50 or 55 per cent of what it ought to have done during the past year. It is not guesswork; it is merely adding up the figures for nursing service or institutional treatment for tuberculosis, etc., etc., perfectly definite things. If you change your record from 50 per cent to 75 per cent in two or three years you have made real progress. This chart will enable you to put before men's clubs and women's clubs and chambers of commerce, etc., in a concrete way just what you have done. I have in mind one city of a mililon population out in the middle west. The city fathers reached out and took in a large territory. (I might say their institutional care for tuberculosis was quite in keeping with that of other cities.) They took in this extra territory, which was not of a very high character; and the health officer scored himself again and found he was heavily overloaded with tuberculosis. He was able to show by his score that before the annexation of this territory they had had ample care of the tuberculous, but now it had dropped down fifteen per cent. It so impressed the city fathers that they authorized a bond issue for a tuberculosis sanatorium.

You will find that the appraisal is a business-like way of putting health problems before your community and that business men and women will listen to you when you talk to them in those terms.

Dr. J. Roy Hege, (Winston-Salem): In 1926, I think it was, the State Board of Health sent me one of these appraisal forms to fill out which looked very much like the one Dr. Walker has. It was one for rural work for experimental purposes. I was very much pleased with it, for the chief reason that it suggested so many things as one went along scoring the work. It not only showed you the main subjects but went into details about the various visits that you made, and kept you more or less balanced, I felt. That was quite different from our regular State record keeping, which was just so many items jotted down, as you all know, and not very suggestive of a wide field. When you think of our old appraisal form you can not help but like it, for this reason. A few years ago, when you made your statement at the end of the year, you showed you had made one dollar or two dollars or three dollars or four dollars, etc., for every dollar appropriated. I liked that, because when we went before our county commissioners we had something perfectly definite to tell them. That was gotten up by Dr. Rankin, I believe, and he evidently knew what county commissioners think of the dollar.

I like this new form, and since the State is very well organized as to health units and the public enlightened as to the meaning of 50 per cent, etc., I find they understand it very well. Then, too, other communities have it; and I find we do not have to talk so much about money but go in and tell them other counties have it. So personally I should like to see the report changed.

Dr. J. A. Morris, (Oxford): Dr. Sisk this morning, in referring to the evaluation of work and taking a survey, said that everyone ought to welcome this as a business record. It is that; it is nothing in the world but taking stock. But as to setting standards by this method I do not know how it is going to work. I believe in it and am very glad to shift from the old to the new. I have already, since the book was put in my hands by Dr. Sisk, been studying it and have told my commissioners about it. But it is business, and business is not much without capital. Inasmuch as we are almost without capital we can not show much return. As to the evaluation of what has been done, I do not know what my superiors think of it; but I have worked. If you will give me the business capital to go on I will show results. Without capital we cannot do much. In my county there is little wealth, and with the fifteen cents limit on taxation imposed by the Constitution we have been working under difficulties. The personnel of my department is myself and a nurse and a part-time clerical assistant. I have done much work in my county, but I have not that faculty of turning from work to recording it which I see in Dr. Yoder. But I think under this plan I shall be able to get more money and get out of that difficulty.

Dr. J. H. Hamilton, (Wilmington): I was very much pleased with Dr. Walker's statement about the importance of diagnosis of community needs. I agree with that part whole-heartedly, because communities differ just as much as individuals. So far as the appraisal form is concerned, I fail to see where it makes a diagnosis at all; it is a score card on treatment. It do not see how it covers all our public health activities, nor do I see how it could. In my community malaria is a public health problem; in my community we have spent about a million dollars on malaria control in the last ten years. I think it is perfectly justified, but yet there is no credit given us on that form. There is a limit to the amount of money that can be spent for public health needs. I do not think anyone would criticize us for spending what we do on malaria work, but it leaves us less for other work.

When it comes down to the individual items we can argue, for instance, about the desirability of spot maps in a small community, for instance, where the health officer knows every part of his community. In a small county I think it is a matter of debate whether they are worth the effort. Another thing is that one man gets a perfect score on his dairies by about two visits a year, while I have a tough time with my dairies visiting them twice a month. I think the appraisal is of value because it brings out the weak spots and shows us things we are apt to overlook. At the same time, I doubt the advisability of making it a uniform State report.

Dr. C. W. Armstrong, (Salisbury): Today happens to be my birthday in public health work, and during the ten years I have been in this work we have had a great many different forms. To use the dollar mark in evaluating public health work I think is a very poor system. Under that system the poorest health department may show up the best. Under that system of reporting, county officials and city officials and other officials

in North Carolina received copies of the reports and formed wrong opinions. If a county had ten thousand cases of measles it stood away up ahead of mine. This appraisal appears to me to be very much better and a much more satisfactory sort of thing than the amount of return on the number of dollars spent.

Dr. R. S. McGeachy, (Kinston): I never have liked that old form of report, the number of dollars return on a certain expenditure. I wish to say that I would never state that a man would pad his report, but this thing of one department's doing more than all the other departments in the State put together did look funny. It showed that either we were not working at all or one department was overstressing certain lines. I was very glad when steps were taken last fall to divide up the state into districts. I do think we might all get together, as we did last year, and have a committee appointed for the eastern part of the state to cooperate with a committee from the western part of the state to work out ways of making a report. I should like to know if that committee has been appointed in the western part of the State.

President Hudson: I shall refer this inquiry to the Resolutions Committee, with a request that they consider it.

Dr. Walker, closing the discussion: I am very glad to have had this discussion on this subject. I guess the matter of appraisal of health work, city and rural, and State health work, is very much in my mind, and I am very much interested in it, but we want to do it in accord with the thinking of health officers all over the country, and it is only by such meetings as this and by an occasional letter that we can get an expression of opinion.

A number of interesting points arose in the discussion. One I thought of as I sat down which I had not touched on is quality versus quantity. You will hear the appraisal form criticized because it does not measure quality. If your nursing service (where quality is often criticized) goes to Mrs. Jones several times and does not deliver quality service, after a few times you will find the door closed in your face. You cannot keep on year after year delivering service unless the quality is good.

The matter of dollar standards was discussed very freely at the time this appraisal was first worked out. Dr. Rankin, who at that time occupied the position I now have, was very enthusiastic for the dollar standard. But we ran into this difficulty, that the dollar does not purchase the same amount of service on one coast as the other. So we cannot use a dollar standard very well if we are going to use it all over the country, and it has the same objections that have been raised here.

The point Dr. Morris raised in regard to the matter of clerical assistance is a very important one. What the health officer needs is a good clerical assistant who can organize his work and relieve him of clerical details in an efficient way.

In regard to malaria, malaria is treated more as a sanitary problem than as a disease itself, and in the areas where malaria is a problem it is combated more by sanitation methods than by other measures.

The padding of reports does happen. I believe the only preventive measure against that is a certain amount of the right kind of State supervision. If you adopt, as has been adopted in other states, a system of reporting by local department to the state health departments on the basis of the appraisal form, and if there is the proper amount of friendly supervision, you will find that padding will not cut much figure.

The last point is the use of the appraisal as a text. The left-hand page has been amplified so that it really does form a brief and authoritative text on public health administration. I think most of you will agree that it is a good summary of public health administration measures.

REPORT OF THE COMMITTEE ON RESOLUTIONS

The Committee offered the following resolutions, which were adopted:

Resolved: That this Association request its Secretary to write Dr. W. S. Rankin a letter expressing our sympathy in the recent loss of his father.

Resolved: That the Secretary also be instructed to wire Dr. H. A. Taylor, who is ill and cannot be present at our meeting, an expression of our regrets and our wishes for his speedy recovery.

Resolved: That the President appoint a committee to draft resolutions of respect for our late co-worker, Dr. J. W. McNeill, of Fayetteville, to be presented at our next annual meeting.

Resolved: That we extend to the Pilot Life Insurance Company our sincerest appreciation for the many courtesies shown us during this our nineteenth annual session:

1. In providing a most comfortable and healthful meeting place.
2. In providing us a bounteous and delicious luncheon in their spacious dining room.
3. We wish especially to thank Mr. A. W. McAlister, President of the Pilot Life Insurance Company, for his words of welcome and cordial greeting and his expression of sympathetic understanding of the problems facing public health workers.
4. To Dr. L. A. Riser we express our thanks for his efforts in providing for the entertainment and comfort of the members of the Association.

Resolved: That this Association express to our visitors our appreciation of their presence and their participation in our program.

(Signed)

L. J. Smith,
C. W. Armstrong,
R. S. McGeachy.

EVENING SESSION

(Florentine Room, King Cotton Hotel)

6:30 p. m. Dutch Luncheon.
7:45 p. m. Installation of officers for the ensuing year.
8:00 p. m. Radio hour. Broadcasting over WNAC.

RADIO TALK BEFORE PUBLIC HEALTH ASSOCIATION

By THURMAN D. KITCHIN, M.D.
President, Medical Society of the State of North Carolina

ESSENTIAL QUALITIES OF AN ALL-ROUND DOCTOR

In the very outset I wish to say that this subject is not of my choosing; most emphatically I disclaim all pretense of embodying the essential qualities of any doctor at all—much less an all-round doctor. I do not even feel qualified to *discuss* the topic. However, my task is before me; the microphone is before me; I must begin to express my views on this subject in which I am so vitally interested. But I do so with great humility of spirit.

I believe that one of the first characteristics of an all-round doctor should be what may be called "the will to serve." The Black Prince's motto, "Ich dien"—I serve—might with profit be adopted by every member of the medical profession. By this I mean that he should try to perform every task that comes to hand to the very best of his ability; not chafing because the task may seem trivial, not hesitating because someone else might carry it through with more of a flourish, but using the best that is in him to accomplish it—his talents, his training, his experience. This willing mind, this forgetfulness of self, both are matters of growth, and if developed from early childhood, so much the better for the doctor when he assumes his duties.

Assuming, then, that a doctor should do with his might what his hand finds to do, let us consider further qualities. These are determined in a measure by the function which he must perform. History tells us that these functions vary with the development of the race and the science of medicine. In the early days the art of healing was linked with religion, and the priest-physician moved in an aura of mysticism, the mysticism which is the basis of our present day psychotherapy. Over this period the sinister influence of black magic hung like an impending cloud. Even to this day any type of treatment which combines the mystical, the religious, and the promise of a spectacular cure, prospers for a time at least. Magic, theology, and medicine are easily mixed, with resulting confusion but unfortunately occasional apparent success.

There is not time tonight to trace the history of medicine through its various stages. Suffice it to say at this time that we have advanced in our dealing with the physical and mental man, since at first the aim was simply to relieve suffering, and later to cure the disease, now *prevention* of disease is the end toward which the profession is working. (I do not need to state that until the ills of the body and mind have been stamped out altogether, the effort to relieve and to cure will always be a part of a doctor's duty). Prevention was first undertaken by the governmental health departments and dealt with the masses of the people. Now, through

individual prevention by the individual doctor, in cooperation with the public health officer, the aim is prevention in every form. That is, the public health man having the knowledge and interest of the private doctor, and the private doctor having the knowledge and interest of the public health man, they supplement each other. Their fields may overlap, it is true, but there is no duplication in the work, since the one emphasizes mass prevention and the other personal prevention.

In an era like this, when the practice of medicine demands so much more of a doctor than ever before in its history, it is of course essential that he prepare himself to the highest degree of excellence through scientific knowledge and clinical training. Such preparation is presupposed. But since he is an individual first and then a doctor, it is imperative that this training be superimposed upon a full man, which brings me to the point of saying that the first essential of an all-round doctor is for him to be an all-round man, who accepts and appreciates his obligation to his profession, his patient, and his community. Such a man must have a background of culture, must know more of the world than is contained in his medical library. He must abound in vitality, must have optimism, not looking upon this world as if it were a dismal prison house—"It has indeed got all the ugly things in it but there is an eternal sky over it; and the blessed sunshine, and green prophetic spring, and rich harvests coming." He must broaden his horizon, realizing that he is no less a citizen because he is a doctor, but rather that he is a citizen with added responsibilities, and consequently he should prepare himself to the limit of his ability to meet these responsibilities, and to perform them with all the grace and enthusiasm and efficiency his manhood can bring to bear upon them. Medical problems themselves, broadly speaking, often may require for their solution judgments based upon general knowledge as well as upon medical knowledge proper, and so to be well rounded in the profession, as well as a citizen of broad interests and deep sympathies and ripe wisdom, the physician must have general knowledge as well as technical knowledge and skill. And he must have the ability to coordinate his knowledge for the benefit of his world in general and for the benefit of his patients in particular.

This brings me to another essential quality of an all-round doctor,—his attitude toward his patient. He must have the ability to mix the best of his scientific training and professional interest with a personal concern for the patient as a social unit, a personality. The public health man, whose concern is for the masses, does not consider this a narrow view, for the doctor's purpose is to serve society, the unit of which is the family, and the family in turn is made up of separate entities, or individuals. Thus he may save the individual, the family, and society. In the mad rush to apprehend and apply new discoveries in medicine, he must not lose sight of the *personality* of his patient, the spark animating the clay. Already familiar with the behavior of the disease, he must rediscover the indi-

vidual, and this requires a degree of judgment, sympathy, and understanding which transcends the technical lore of test tube and microscope. By this I do not mean to convey the idea that he should abandon one iota of his specialized equipment, nor a single one of his scientific calculations, but he must realize that the practice of medicine is more than the diagnosing of disease and applying appropriate remedies. The doctor must have a heart as well as a head, for the patient is composed of mind and spirit as well as body. There is a point beyond which science cannot go, and the physician must be prepared to give comfort and keep up the morale of the sufferer. To keep life going at full tide is one important duty, but to be present and to be a bulwark when the tide of life is going out is a duty just as important. In truth, medical statesmanship may be defined as the art of the control of human life, and it is a doctor's obligation to prepare himself to be such a statesman.

It may not be possible to reach the ideal of Amiel, as he says in his Journal: "To me the ideal doctor would be a man endowed with profound knowledge of life and of the soul, intuitively divining any suffering or disorder of whatever kind, and restoring peace by his mere presence . . . The model doctor should be at once a genius, a saint, and a man of God." However, it is possible for him to have a harmonious blending of these characteristics. Picture Dr. William McLure, the idol of Drumtochty—picture him, if you will, as he tempers the fevered body with water which he himself brought laboriously from a mountain stream and by homely remedies and the sheer pull of his personality keeping the sick man from slipping over the brink. Then picture the scientist, giving himself wholeheartedly and unstinted through interminable hours in his laboratory that humanity may have vaccines and anti-toxins, that the walls which disease has built around an intimidated world may be battered down forever. Such a combination forms a type embodying all the essential qualities of an all-round doctor. Is this too high an ideal? Am I thinking, do you say, of a superman instead of a man? Not at all, because such men have lived, and are living today. Their inspiration, their guiding star, their motivation may be called by different names but in the last analysis is the same.

"A picket frozen on duty,—
    "A mother starved for her brood,—
"Socrates drinking the hemlock,
    "And Jesus on the rood;
"And millions who, humble and nameless
    "The straight, hard pathway trod,—
"Some call it Consecration
    "And others call it God."

RADIO ADDRESS

PREVENTABLE DISEASES OF CHILDHOOD

By Wilburt C. Davison, M.D.
Dean, Medical Department, Duke University

Most of the diseases to which children are heir can be prevented. It is just as true of children as it is of automobiles that examinations at intervals and precautionary measures are more economical and more satisfactory than waiting until illnesses require repairs. In order to insure the greatest health to a baby the prevention of disease should commence as soon as the mother knows that the infant is to be expected. The mother should visit her family doctor at least once a month so that kidney diseases, deformities of the birth canal, blood diseases or anything which will interfere with the pregnancy will be detected and corrected. The mother should also visit her dentist twice or three times during pregnancy so that the teeth, which often suffer from the drain of lime salts by the growing infant, may be kept in perfect condition so as not to interfere with her diet. When the baby is born silver nitrate should be dropped into his eyes and he should be examined for any deformities which may interfere with his future development.

During the first year of the baby's life, he should be taken to a doctor once a month. He should be breast fed for the first nine months and after the third month should be given two teaspoonfuls of cod liver oil daily and two tablespoonfuls of orange juice daily to prevent rickets and scurvy respectively. When he is weaned he should be fed lactic acid milk, or pasteurized sweet milk, water and sugar in the proportions recommended by the doctor, and if these sweet milk mixtures are used, they should be boiled in the nursing bottles for at least five minutes. He and his food should always be protected from flies and other insects. At the age of six months he should be given three injections of diphtheria toxin anti-toxin to guard him against diphtheria and at the age of nine months he should be vaccinated against smallpox. After the age of nine months small amounts of scraped meat and green vegetables should be added to the baby's diet so that the iron which they contain will prevent the development of anemia.

After the age of one year the child should be taken to the doctor at least every three months so that his diet and habits of sleep, etc., can be carefully regulated. If his tonsils and adenoids become frequently infected they should be removed. If he receives a severe cut or wound, tetanus anti-toxin should be administered so that lockjaw can be avoided. If he is bitten by a mad dog, or a dog suspected of being mad, he should receive the Pasteur treatment. If he is exposed to measles or chicken pox, he should be given injections of blood from an individual who has recovered from these diseases. At the age of six years, or earlier, if there is any reason to suspect difficulty of vision, his eyes should be examined by a

doctor. After the age of two years the child should be taken to the dentist at least every six months so that the decay of the milk teeth can be prevented. The longer the milk teeth remain in the jaws the better will be the position of the permanent teeth.

Any member of the family, servants, nurses or anyone who comes in contact with children should be carefully examined for tuberculosis if they have a chronic cough, however mild. Tuberculosis in children can only be prevented if those who have the disease can be kept away. Lastly, the mother, doctor and teacher should constantly warn children of the danger of being run over by automobiles.

If the mother and physician cooperate to the fullest extent the following conditions should be prevented: Birth injuries, ophthalmia neonatorum (blindness), undernutrition, rickets, tetany, scurvy, dysentery, anemia, smallpox, diphtheria, scarlet fever, typhoid fever, tuberculosis, measles, chicken pox, malaria, bad and crooked teeth, tetanus (lockjaw), rabies, eye strain, street accidents.

If it is profitable and economical to take a Chevrolet or Ford, costing $700.00, to a garage at intervals for inspection, oiling and repairs, is it not more advantageous to take a child with a potential value of $10,000, according to Government estimates, to a physician for periodic examinations?

In conclusion, periodic examinations by the family doctor offer the best means of enabling a child to thrive and develop as he should.

RADIO ADDRESS

RELATION OF FAMILY DOCTOR TO PRE-SCHOOL CHILDREN

By J. Buren Sidbury, A.M., M.D., Wilmington

The responsibility of the family physician for the pre-school child begins with the prenatal period and not at the so-called pre-school period —that between two and six years. For the work along this line to be most productive of good the family doctor must give the best advice and care during the prenatal period in order that the baby may have a good start in the world with all possible handicaps removed.

It is sometimes advisable to give an expectant mother cod liver oil, or exposure to quartz light, to avoid rickets in the infant. Milk and fresh vegetables are essential in the mother's diet to the proper development of teeth and bone in the unborn baby.

When we are told that one out of every 9 to 12 babies born alive dies before he is one month of age; and that 50 per cent of all deaths that occur in the first year of life occur in the first month; when we are told later, that 20 to 25 per cent of all school children are under the normal weight for their age and that 70 per cent of all school children have more or less physical defects, we must realize the stupendousness of the problem. We were shocked, indeed, when the statistics of the Surgeon General's office in the late war showed us that one-third of our youth of today was

unfit for military service. To meet conditions, we must assume our responsibility for the pre-school child. If these conditions are discovered and remedied in this age period, much permanent good can be accomplished. How shall we proceed with this undertaking? It can only be accomplished by *periodic examination* of the well child from infancy to school age.

It is an acknowledged fact that the age from two to six years is probably the most neglected period in the life of the child and is the period most productive of good or bad in his whole physical life. The child's future may be made or marred in proportion to how well this age period is protected.

The public is well educated to the importance of the proper medical supervision of the infant. Probably the greatest advance in medicine in recent years is in the care and feeding of infants. Our steadily decreasing infant death rate is the result, in part at least, of our newer knowledge of infant feeding. To Dr. McKim Marriott, of St. Louis, formerly of this State, should be given a great share of credit for reduced infant mortality in gastro-intestinal disorders in North Carolina and the South, by his efforts to popularize the use of lactic acid milk.

In this period of infancy, the mother has been trained to the importance of seeking professional advice for the proper food and health habits of the baby. She is given specific instructions about the kind of food, the amount to be given and the hours. Every hour of the day is accounted for in the little patient's schedule.

Unfortunately, this is not true with the pre-school child. When we think of it, it seems rather strange that we should be so particular in one period and so lax in another, when these periods are so closely related. We so frequently see a most painstaking mother relax her vigilance over her infant when he reaches the age of 18 months or two years. He is allowed, to a greater or less extent, to choose his own food, partake of sweets and drinks at irregular hours, and, as a result, faulty food and health habits are acquired, which so often lead to that common picture, "malnutrition." Too little attention is paid to the daily nap. The pre-school child is not required to continue the daily nap and natural consequences of over-fatigue, loss of appetite and loss of weight ensue. This, in turn, produces a cranky, irritable child, who becomes more susceptible to the ordinary infections of childhood.

We must teach the mothers of our little patients that it will be necessary to see the baby at regular intervals, *after he is two years of age,* if we expect to keep him in good physical condition. It will be necesary to see him at least twice each year, to check upon any disease condition that might not be apparent to her inexperienced eye.

PHYSICAL DEFECTS

It is in this period that physical defects are most common and are productive of the greatest damage to the growing child.

Naso-pharyngeal obstruction is probably the most common cause of malnutrition in the pre-school child, and should be attended to promptly, if permanent injury to the child is to be avoided. Enlarged and infected adenoids and tonsils rank first as offenders in this group and seem to be most difficult to get properly treated.

So often do I have mothers come to me with the history of repeated head colds. The mother says the child has had a cold all the winter and has an attack of fever and vomiting every month. She admits that her doctor says he has *large, infected tonsils,* but she has been told that they should not be taken out until he is six years old. Now there is just as much logic in keeping those tonsils in that child as it would be to tell that mother that her boy has acute appendicitis, or acute osteomyelitis, but she should wait until he is older to have him operated on, for he might stand the anesthetic better at 10 years, and he might get over this attack or "outgrow it." If this infant, or child, is young enough to have infection in his tonsils, which he does throw off, *he is old enough to have them removed. Age* has *nothing, whatever,* to do with the *indications* for *removal* of *infected tonsils.* If the child, or infant, has infected adenoids or tonsils which are giving symptoms, they should be removed at once. Only three months ago, I had an infant's adenoids and tonsils removed at eight months of age. For three or four months she had recurring attacks of head colds, tonsilitis and abscessed ears. Her appetite was very poor and her weight was stationary. As soon as her tonsils and adenoids were removed she began to eat well, has gained four pounds in two months and has taken all feedings eagerly since then.

Another child was seen first at 14 months, with a history of repeated attacks of fever since three months of age. Each attack would last 10 to 21 days. She would show a red throat and pus in her urine and ran a temperature of 101 to 105. Her tonsils were removed at 14 months and she has been well for the past 10 months. She returned four days ago with history of fever, 103, for three weeks, with pus in her urine. An X-ray of her chest was negative, but her right maxillary sinus was filled with pus. This is one of the complications of naso-phryngeal obstruction, which occurs when allowed to go untreated.

Vital statistics tell us that 10 per cent of all cases of whooping cough and measles occur under the age of five years, and that 95 per cent of the deaths of these diseases occur under five years. More than 50,000 children die from diphtheria and scarlet fever annually in America, and 70 per cent of this number died before they reach five years, (Emerson). According to Frederick Crum, "One-fourth of all deaths occur before the end of the fifth year, or six times as many as in the next 10 years of life."

COMPLICATIONS

Complications following the contagious and infectious diseases are often more serious than the diseases. These take more lives and cause more damage than the diseases themselves. How often can we trace causes

of malnutrition to some previous attack of whooping cough, scarlet fever or diphtheria? The malnourished child is especially susceptible to infection and it is most important to keep the weight of the pre-school child up to par. Infections, and their sequellae, lower the resistance of the child and retard both mental and physical development. The impression that children have to have diseases and the "earlier they have and get rid of them the better," is dangerous teaching. My contention is "the longer the child can put off having these contagious and infectious diseases, the better." The older the child is the better they withstand these infections. It is not necessary that they should have them at all. It is our duty to avoid any and all infections when possible.

DENTAL CARIES

Dental caries rank very high as physical defects in the school child as well as in the pre-school child. Each child should be required to visit a good dentist every four months. The teeth should be cleaned and any decays attended to. If the decay is so large that the pulp of the tooth has been entered only extraction will suffice. It will invariably become infected and be a source of infection to the child. Many dentists will advise letting these decayed teeth alone. They tell the mother "they will soon come out anyway." This is bad advice and will not be given by the best dentists. Most dentists give this advice because they do not want to work on children's teeth, because "most children make bad patients." A "gumboil," or abscessed tooth, is a potential focus of infection and frequently causes pyelitis. Gum boils should be promptly and properly treated.

It is our duty as family doctors to take more interest in the well child. We should impress upon the mother the importance of periodic physical examinations of the so-called well child, as a preventive measure. We must impress upon the mother the dangers of the *common head cold.* It is the forerunner of otitis media, mastoiditis, sinusitis, pneumonia and many other diseases. We must stress the importance of keeping the pre-school child from exposure to contagious diseases. Whenever possible the child should be rendered immune to these diseases. We must preach the gospel of the Schick test and toxin-antitoxin as a preventative of diphtheria and urge all mothers to give the toxin-antitoxin to their children any time after 9 months of age. We should insist that every child, who enters school for the first time, shall have a certificate of successful vaccination against diphtheria and smallpox. Typhoid fever, diphtheria and smallpox can be eliminated by vaccination and we should urge all our patients to take advantage of it.

Whenever there is an epidemic in the town, or country, all pre-school children should be kept at home and protected from exposure. They withstand these diseases much better after 5 years.

Tuberculosis was once considered a fatal disease for infants and children. Now we know that tuberculosis in children occurs more often

than we once thought. We also know that it can be cured if an early diagnosis is made and proper treatment given.

We, as physicians, must first recognize the fact that tuberculosis in children is usually *not pulmonary, but glandular,* and that it cannot be detected by the stethoscope. It can be detected rather simply by the use of the skin test and the X-ray, in combination with clinical symptoms. Fever, loss in weight, night sweats, loss of appetite, a positive skin test and X-ray findings give positive evidence of the disease. All of these signs may be present without any signs in the lung. *This is the usual picture.* If these cases are diagnosed early, they can be cured and pulmonary tuberculosis prevented in adult life.

Another, and as important a duty, as a diagnosis of this case, is our duty to *find* the *source* of the *infection.* This can only be found out by having every adult, who comes in contact with the child, examined for tuberculosis. It is often a parent, grandparent or servant, who has had a "cough for years." The location and treatment of this infected person are important steps in the treatment of the disease.

Only 10 months ago I had a case of tuberculous-meningitis in an infant of one year, who contracted the disease from the father, who stated that he was perfectly well. He later stated that he had "flu" six months before and had had a slight cough "in the early morning" since then. He was examined and found to be an open case of pulmonary tuberculosis. His sputum was loaded with tubercle bacilli. The baby died. The father is now in the N. C. State Sanatorium and Dr. McCain says he is going to get well.

Again let me emphasize the importance of periodic physical examination of all ages. We must keep in touch with the child from infancy to old age, if we expect to reduce our infant and child mortality. It *can* be *done* if the *family doctors* will *take* the *responsibility* of *carrying* this *message* to *their patients.* We must pay more attention to the malnourished child.

The malnourished child is not a well child and should be carefully studied and the cause of his malnutrition determined and corrected.

It should be our ambition to have every child, who enters school for the first time, physically up to par.

It is an economic problem as well. It has been shown that some 20 per cent of all children in school are repeaters. It is estimated that it cost New Hanover County $88,955.70 in 1925 for duplicate teaching—"teaching the repeaters." All of these repeaters have some physical handicaps, which may be remedied.

Emerson says ,"No child should be admitted, even to the kindergarten, until every effort has been made to bring him up to normal weight. When the malnourished child is not given such care during the pre-school period, the added strain of school life makes it increasingly difficult to regain the ground lost, and he risks the danger of falling farther and farther below his normal standard of growth and health."

If this problem is to be met effectively, we must adopt systematic physical examination for all ages.

During the first year the well infant should be seen by his physiciar twice each month for the first six months and once each month for the second six months of his life. During the second year he should be seen at least once every two months. From two to three years the baby should be seen every four months and from three to twelve years the child should be seen twice each year.

It will be only through systematic periodic examinations that our incidence of disease will be reduced, our span of life lengthened and tuberculosis, heart disease, and kidney disease of the adults reduced to the minimum.

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